AREAS 8-14 Native Community Management Classification

INTRODUCTION

Within the Northern Highland-American Legion State Forest, there are seven Native Community Areas.

Area 8: Lake Laura Loamy Hills
Area 9: Hemlock Hardwoods
Area 10: Peatland Wetlands
Area 11: Red and White Pines
Area 12: Mixed Forest
Area 13: Special Aquatic
Area 14: Johnson Lake Barrens

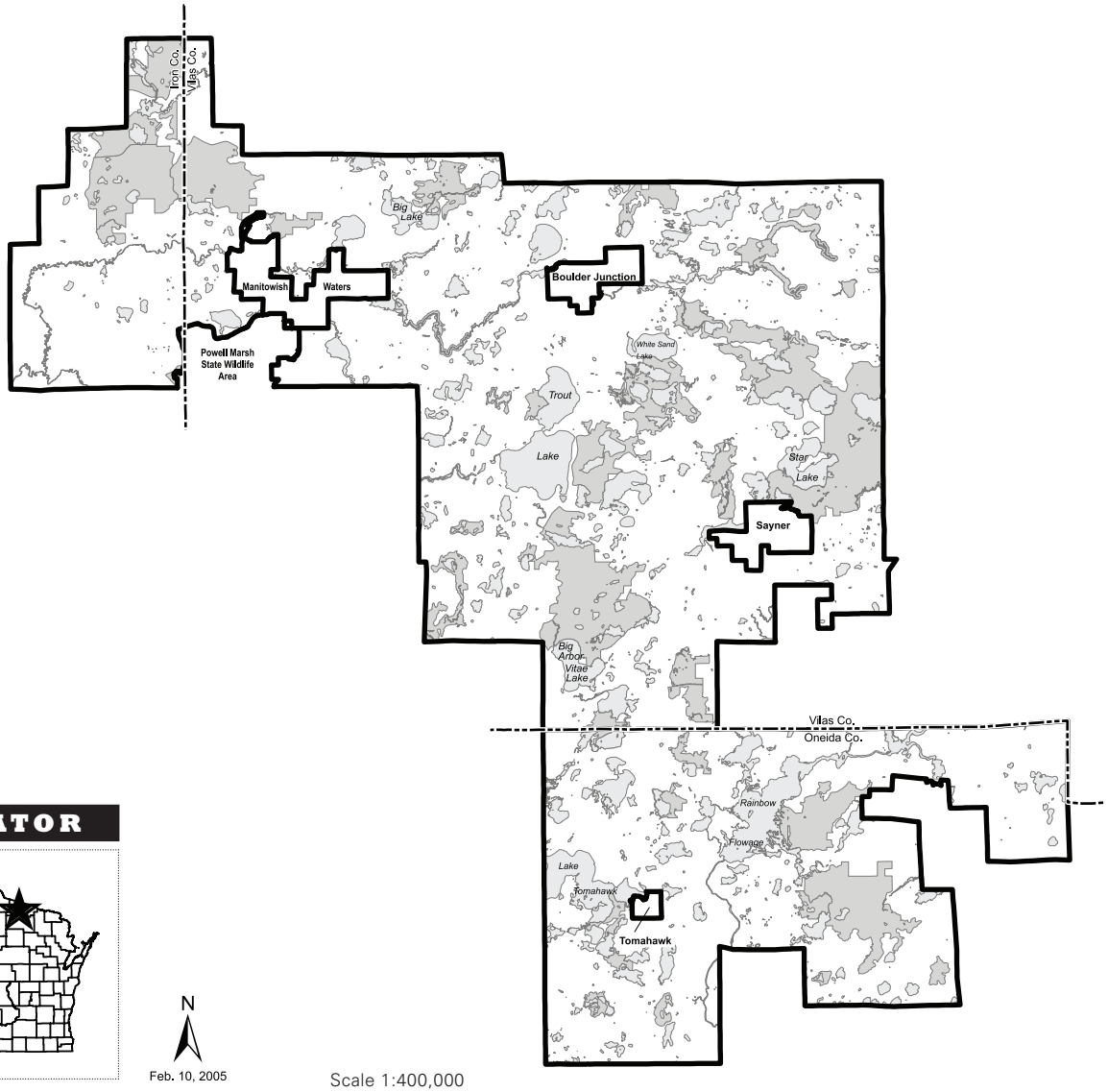
INTRODUCTION

Native community areas are managed with the primary objective of representing, restoring, and perpetuating native plant and animal communities, whether upland, wetland or aquatic, and other aspects of native biological diversity. Management activities are designed to achieve land management objectives through natural processes whenever possible. Examples of management activities within native community areas include timber harvesting, herbicide application, burning, limited planting, road construction and erosion control (WDNR 2001).

For millennia on the NH-AL, climate and natural processes such as fire, ice, wind, drought and insects, where in today's landscape, mimicking requires combinations of passive and active techniques. These processes have been greatly altered during periods of the past century via resource exploitation, patchy intense development, and fire suppression to name a few. Native community management areas would use these past natural disturbance patterns as a model for making management decisions regarding passive management, the intensity of active management at any one site and the use of fire as a management technique.

Native community areas will be managed to provide the full range of native plants and animal communities found on the NH-AL including old growth forests, open barrens, and undisturbed wetlands. These management areas were chosen using biotic inventory, community restoration and old-growth data and through the public involvement process. Only those areas of highest value for protection or community restoration were selected. Whenever possible, management activities in native community management areas achieve their objectives through natural processes (passive management) and active management techniques that mimic natural processes. A comparison of the various ecological attributes provided by each type of land management area is shown in the appendix.

MAP 10: NATIVE COMMUNITY MANAGEMENT CLASSIFICATION AREAS



LOCATOR

N

Feb. 10, 2005

Scale 1:400,000

MAP 1 LEGEND

- State Forest Project Boundary
- **Native Community Management Classification Areas**
  - Area 8. Lake Laura
  - Area 9. Hemlock Hardwoods
  - Area 10. Peatland Wetlands
  - Area 11. Red and White Pine
  - Area 12. Mixed Forest
  - Area 13. Special Aquatic
  - Area 14. Johnson Lake & Barrens
- Other State Forest Management Areas
- County Boundary
- Open Water

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

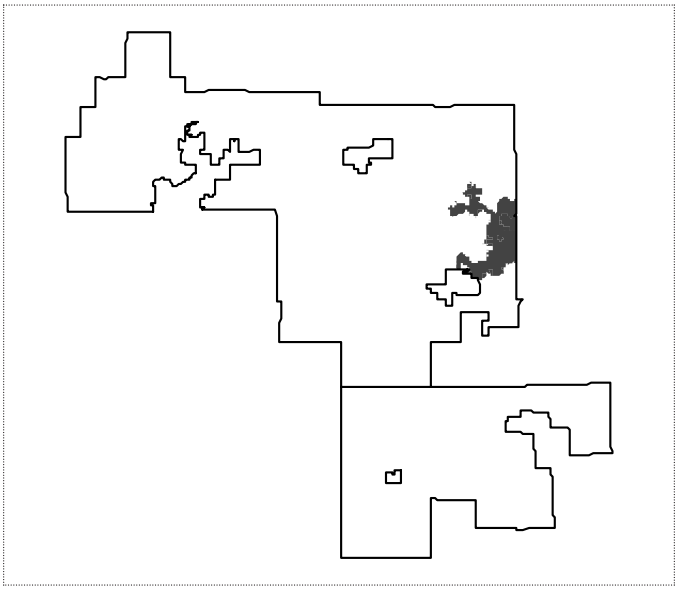
AREA 8 Native Community Management Classification

LAKE LAURA LOAMY HILLS

This area consists of 8,268 acres of primarily rolling upland northern hardwoods with well-drained sandy loam soils in the east central portion of the forest. Loamy sands and organic deposits also are common. The area is mostly public land (6,896 acres) with a smattering of private parcels.

The forest at present is dominated by northern hardwoods composed of a mix of sugar maple, basswood, aspen, yellow birch, and hemlock which is in or approaching mature forest conditions. In addition, stands of relict old growth hemlock hardwoods, white birch and aspen are present within this northern hardwood landscape. This is in contrast to most of the NH-AL, which features sandy soils and forests of red/white pine, aspen, and oak. Three groves of hemlock comprising the oldest known stands on the NH-AL with many trees over 270 years in age are found in this area. The habitat types in Area 6 are typically characterized by a moderately developed understory of shrubs such as hazelnut, maple-leaf viburnum, leatherwood and ground layer plants such as wild lily-of-the-valley, wood fern, grape ferns, and sedges. Small areas of unforested and forested wetlands (tamarack, black spruce and white cedar) are also found here. At European settlement, the upland areas were mostly covered with white pine, yellow birch and white birch. Aspen and sugar maple were the important secondary species.

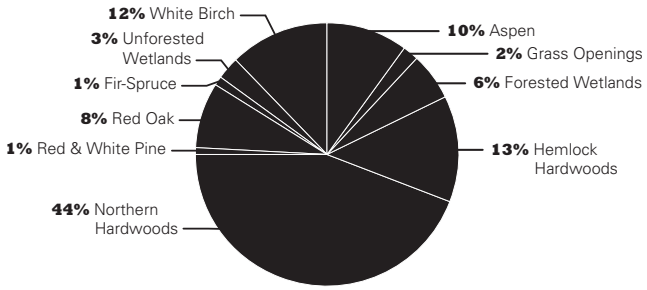
AREA 8 LOCATOR MAP



AREA 8 SUMMARY

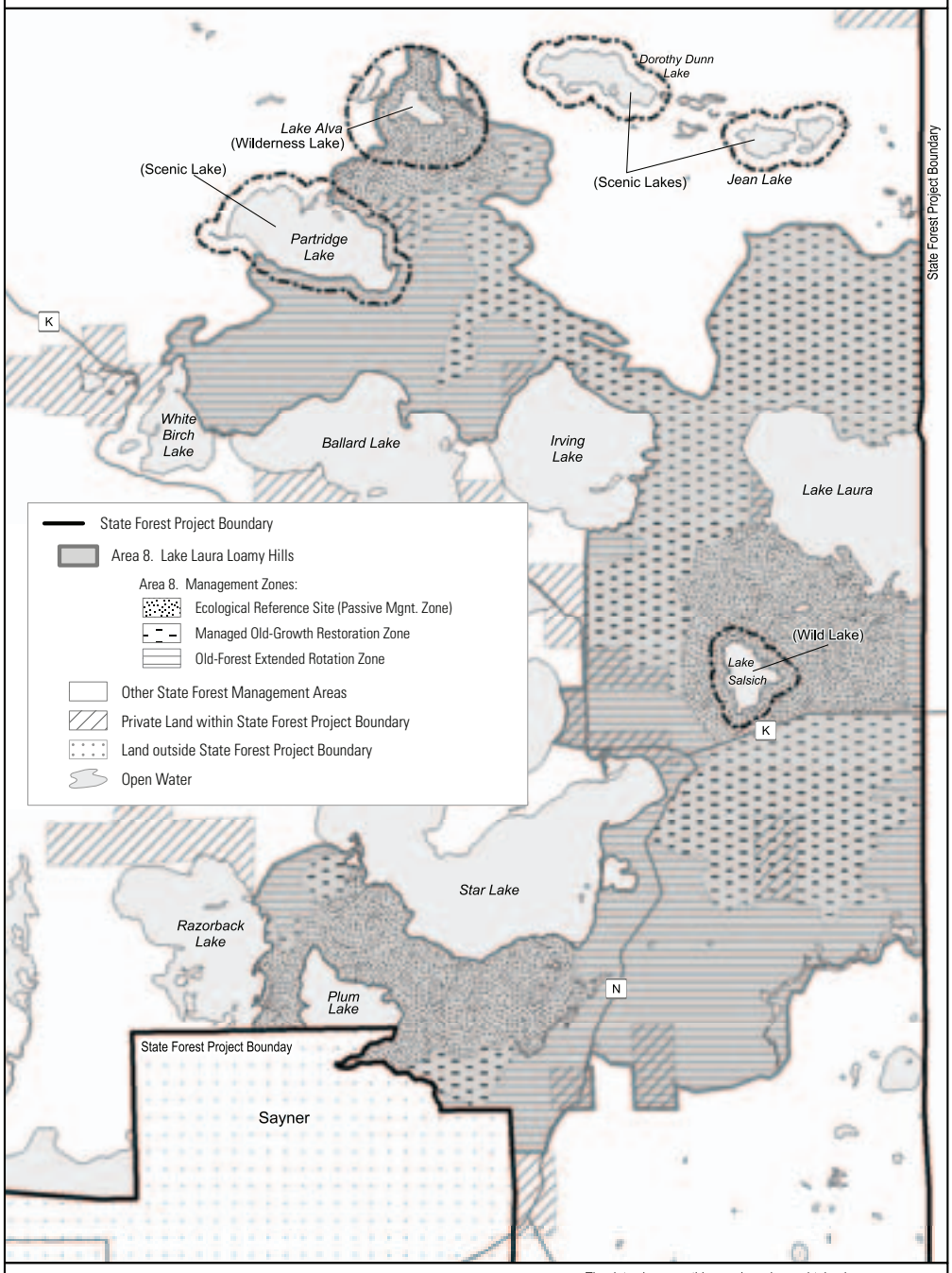
- This area is approximately 8,268 acres in size with 6,896 acres in state ownership.
- Opportunity to maintain a forest with large, old trees, and the characteristic species and ecosystem functions associated with old growth hemlock-hardwood forests.
- Establish three, passively managed old growth forest sites,
- Opportunity to manage a portion of the area using extended rotation and retention of early succession patches to complement the old growth and retain structural diversity.

AREA 8 CURRENT LAND COVER



Native Communitiy Management Classification

Map 11. Area 8 - Lake Laura Loamy Hills



AREA 8

Native Community Management Classification

LAKE LAURA LOAMY HILLS

LONG-TERM MANAGEMENT OBJECTIVES (100 YEARS)

- Develop a structural, compositional, and functional hemlock and northern hardwood forest with old-growth characteristics. Within the old-forest portion of the management area, retain trees to their biological age to maintain and enhance ecological functions.
- Provide opportunities for research, education, and interpretation on the ecological reference zones and the managed old-growth restoration zone.
- Provide old-growth wildlife viewing opportunities and sites where people can experience the inspirational aesthetic and philosophical values associated with an old-growth forest.

SHORT-TERM MANAGEMENT OBJECTIVES (50 YEARS)

- Maintain three passively managed ecological reference sites within the old-growth restoration zone– Lake Alva Birch-Hemlocks (314 acres, includes lake acres), Lake Laura Hardwoods (852 acres, includes lake acres), and Plum Lake Hemlocks (744 acres).
- In the old-growth restoration zone and outside of the ecological reference sites, use limited active management to increase old-growth forest attributes (e.g. snags and coarse woody debris) and to enhance the composition of northern hardwoods (i.e. increase the amount of white pine, yellow birch, white cedar, and hemlock).
- In the old-forest extended rotation zone, using active management establish a mixed forest with abundant old-forest characteristics; particularly large, vigorous trees, and increased the dominance of white pine and other long-lived species throughout the zone.
- Maintain the forested and unforested wetlands of the Ecological Reference Sites in a natural, unmanaged condition, except for invasive species control. In the actively managed zones manage forested wetlands to meet their individual zone objectives.

RESOURCE MANAGEMENT PRESCRIPTIONS

The General Timber Type Management Prescriptions and their all of their associated management activities (described at the beginning of the Land Management Section) apply, except as limited by the prescriptions below:

ECOLOGICAL REFERENCE SITES

- Passively manage these sites. Perform no active forest management, including any salvage operations, except to clear trails or roads and even then the material would be left on site. Exceptions to salvage restrictions because of statutory responsibilities for fire protection or forest pest control may be granted after review by an interdisciplinary team.
- The State Natural Areas Program will coordinate base line vegetation data collection within ten years, then monitor the changes to that vegetation once every ten years thereafter to compare with the managed old-growth data collection.
- The State Natural Areas program will work with local fire suppression staff to develop strategies that consider the management goals of this area while conducting wildfire suppression activities.
- Salsich Lake, a designated wild lake, lies within this area. The passive management prescribed is fully compatible with the management requirements for a wild lake. See the wild lakes management zone section for information on the non-vegetation management requirements within the wild lake zone.

MANAGED OLD-GROWTH RESTORATION ZONE

The management strategy for this zone is to maintain a landscape that contains old growth components, yet will still contain early and mid successional parts. These conditions will shift location in the zone over time as disturbance occurs. Ongoing research on old-growth characteristics should help develop active management guidelines.

- Adapt the techniques described in the General Management Prescriptions to specific stand conditions with the goal of creating, enhancing and maintaining old growth northern hardwood characteristics on appropriate sites, including, promoting coarse woody debris and snag densities similar to the old-growth reference sites. In hardwood stands emphasize various combinations of sugar maple, hemlock, yellow birch, white pine, basswood, red oak, and white birch.

Table 2.8 Area 8 Lake Laura Loamy Hills, Current and desired future conditions for community types in acres and percent of total.

Community Type	Current		Desired Future Condition	
	Acres	% of Total Area	Acres	% of Total Area
Aspen	669	10%	400	6%
Grass Openings	143	2%	0	0%
Forested Wetlands	418	6%	290	4%
Hemlock Hardwoods	925	13%	1,000	15%
Northern Hardwoods	3,011	44%	3,721	54%
Red & White Pine	75	1%	100	1%
Red Oak	541	8%	300	4%
Fir-Spruce	62	1%	0	0%
Unforested Wetlands	237	3%	365	6%
White Birch	815	12%	720	10%
TOTAL	**6,896**	**100.00%**	**6,896**	**100.00%**

The increase and decrease of forested and unforested wetlands is due to natural succession or natural catastrophes.

- Salvage of trees damaged by storms, fire, insects or disease will be evaluated by an integrated team led by Forestry staff. The decision whether to salvage or not will be based on the management goal of increasing coarse woody debris and snag components in this management area while considering fire suppression, forest pest control and product values.
- Conduct experimental management to enhance the composition and structure of managed old-growth northern hardwood stands. Techniques may include canopy gaps and small scale shelterwood or seed tree harvests to increase yellow birch regeneration. Also, areas may be under planted with white pine and when the pine are large enough to be released, a harvest to remove the trees shading the young pines could take place.

OLD-FOREST – EXTENDED ROTATION ZONE

The management strategy in this zone is to use extended rotation (biological age harvest) and a variety of active management techniques to grow large, vigorous trees while maintaining early successional types of forest stands, such as aspen and birch as a forest component.

- Conduct small-scale shelterwood harvests to enhance forest composition by identifying white pine and yellow birch seed trees and assess the surrounding land for conducting natural regeneration cuts or under-planting. Small areas may be scarified or removal of advanced regeneration sugar maple to enhance seedling establishment.
- Continue to retain most white cedar, hemlock, white pine and yellow birch in harvest areas.
- Regenerate some aspen, white birch and other early successional species. Maintain white pine and other suitable mixed forest species following the General Management Prescriptions for those species. Convert those stands not regenerated to northern hardwoods.
- Convert 143 acres of scattered grassland to natural early succession forest and remove Scotch pine. Supplemental planting of white pine may be necessary to prevent re-establishment of Scotch pine.
- Salvage of trees damaged by storms, fire, or insect disease would occur, but small-scale windthrow could be left in place to complement adjacent old growth attributes.

ALL OF MANAGEMENT AREA

- Conduct research to identify ways to manage for old-growth forest characteristics while producing some economic timber products. Use data from forest reconnaissance monitoring of vegetation to measure change in active and passive managed areas. Apply the information from this research to the adaptive management approach on the forest.
- To the degree possible, use the existing trail network to provide public access for education and ecological interpretation.

STATE NATURAL AREA DESIGNATION

See State Natural Area discussion in the Appendix for detailed information.

Proposed overlay designations for State Natural Area would occur for Lake Alva Birch-Hemlocks (314 acres, includes 26 lake acres), Lake Laura Hardwoods (852 acres, includes 60 lake acres) and Plum Lake Hemlocks (744 acres).

AREA 9 Native Community Management Classification

HEMLOCK/NORTHERN HARDWOOD

This management area is comprised of six sites, Catherine Lake, North Bass Lake West, Plunkett Lake, Sweeney Lake, Jute Lake, and Tomahawk Lake Hemlocks, distributed across the forest. Together these sites total 3,798 acres. (There are two other sites on the NH-AL that were also identified to be managed for similar objectives; however, they are within the Clear Lake and Bittersweet Recreation Management Areas. See those sections for management of those sites.)

The wide distribution of sites cross most of the landforms found in the NH-AL. The soils range from the deep silty loams of the Winegar moraine to very sandy soils of the Vilas-Oneida Sandy Plains. All of the sites are found on rolling topography and all are positioned on the east side of large water bodies. These sites were selected through an integrated scientific process to represent the best locations for developing old growth hemlock hardwood and northern hardwood communities on the NH-AL. As a result, the overall composition of these sites is 50% northern hardwood and hemlock hardwoods, while only 12% supports drier soil higher disturbance species such as aspen, white birch and red oak. Wetlands cover most of the remaining acreage.

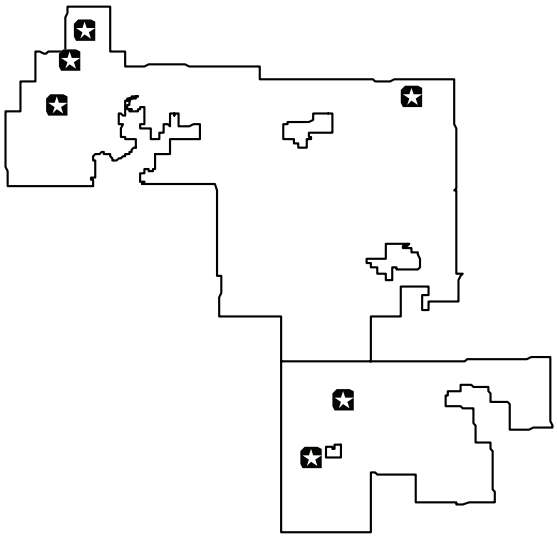
The generally richer soils that support northern hardwoods and hemlock-hardwoods will be expected to have associated ground layer plants such as bluebead lily, lady fern, shield fern sedges and clubmoss, with a poorly developed shrub layer. These six sites occur in a wide variety of land type associations and exist on habitat types appropriate to these species.

Historically, within the NH-AL landscape these sites were likely the least disturbed communities with a disturbance pattern of frequent small blowdowns, infrequent large blowdowns and extremely rare catastrophic fires. Such conditions would produce uplands with primarily hemlock/yellow birch with sugar maple as a secondary species.

AREA 9 SUMMARY

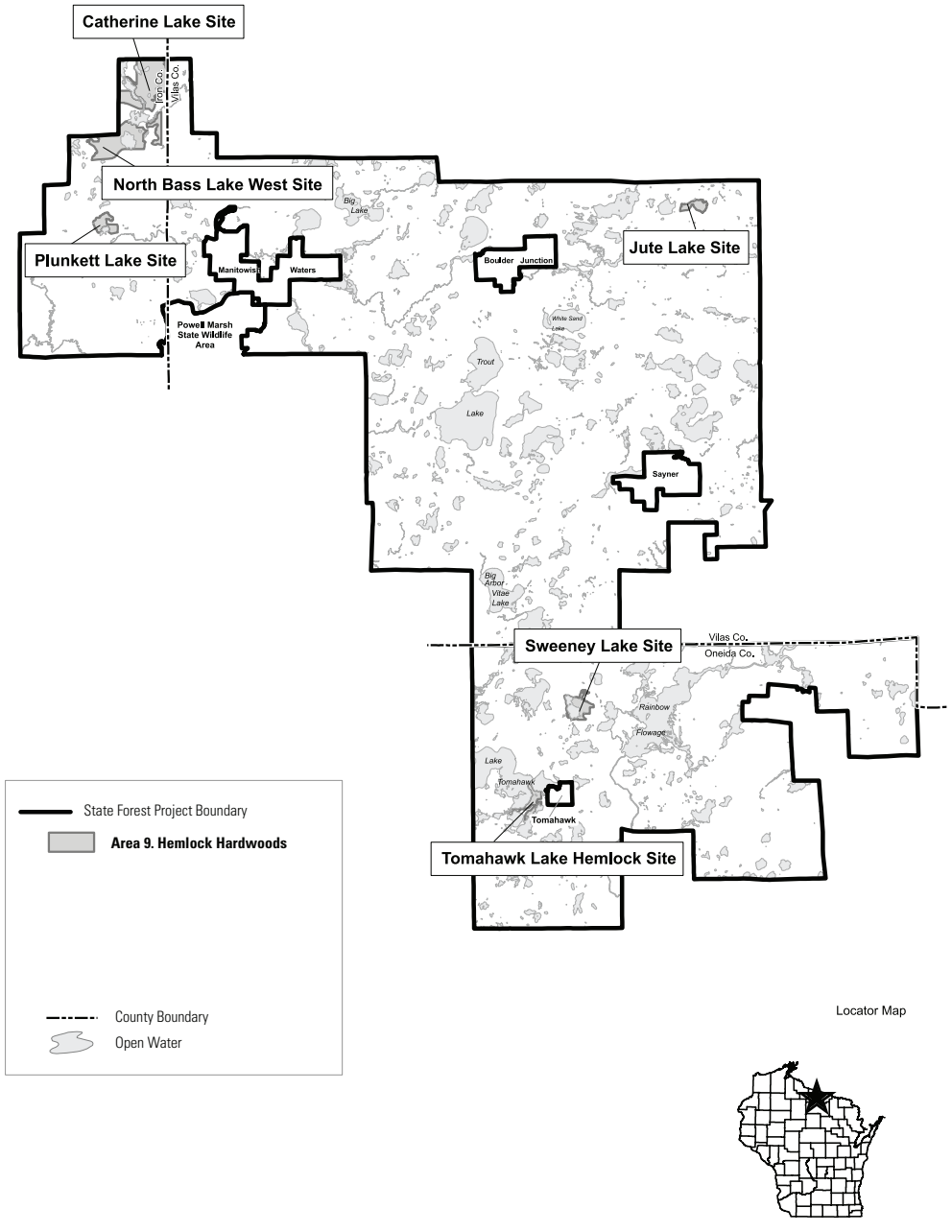
- This area is approximately 4,494 acres in size with 3,798 acres in state ownership.
- Management for old growth hemlock hardwood, northern hardwood and wetlands.
- Opportunity for scenic shorelines, low intensity recreation, research and education management.

AREA 9 LOCATOR MAP



Native Community Management Classification

Map 12. Area 9 - Hemlock Hardwood



AREA 9 Native Community Management Classification

HEMLOCK/NORTHERN HARDWOOD

LONG-TERM OBJECTIVES (100 YEARS)

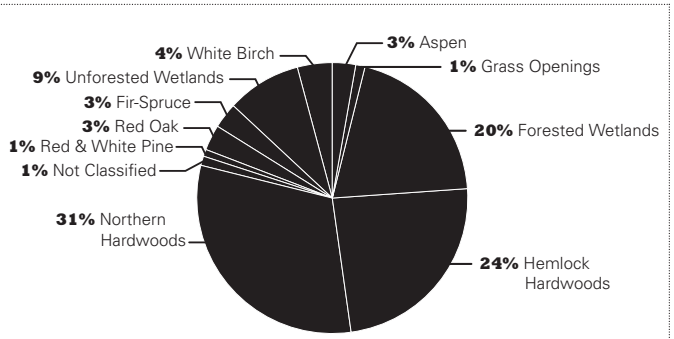
- Maintain multiple sites across the NH-AL landscape that supports old-growth hemlock hardwood communities. These sites support very old trees, complex old-growth forest dynamics and provide habitat for those species that do best in these ecological conditions.
- Use these sites as ecological reference areas and also for research, education, and interpretation.
- Provide old-growth wildlife viewing opportunities, and sites where people can experience the inspirational aesthetic and philosophical values associated with an old-growth hemlock forest.

SHORT-TERM MANAGEMENT OBJECTIVES (50 YEARS)

- Increase the age diversify, composition, and the patch size of stands within the forested area, emphasizing hemlock, white pine, sugar maple, yellow birch and basswood.
- Increase the extent of white pine.
- Establish and maintain large amounts of coarse woody debris, numerous standing dead snags, and an age diversity of trees.
- Maintain four passively managed ecological reference sites; part of Catherine Lake (867 acres, includes lake and private acres), part of North Bass Lake West (213 acres), part of Sweeney Lake (60 acres), and Tomahawk Lake Hemlocks (226 acres).
- Maintain small acres of red oak, white birch, and aspen in the actively managed zones.
- Maintain existing levels of public use and access.

Management in the Hemlock Northern Hardwoods Management Area relies on both passive and active techniques to develop old-growth hemlock/northern hardwood forest communities.

AREA 9 CURRENT LAND COVER



RESOURCE MANAGEMENT PRESCRIPTIONS

The General Timber Type Management Prescriptions and their all of their associated management activities (described at the beginning of the Land Management Section) apply, except as limited by the prescriptions below:

- In areas outside of the passively managed ecological reference sites, conduct small-scale shelterwood harvests to enhance forest composition by identifying white pine and yellow birch seed trees and assess the surrounding land for conducting natural regeneration cuts or under-planting. Small areas may be scarified or removal of advanced regeneration sugar maple to enhance seedling establishment. This can be accomplished, as part of larger management plans or on its own. Retain coarse woody debris and snag densities similar to the old-growth reference sites.
- Continue to retain most white cedar, hemlock, white pine and yellow birch in harvest areas when suited to the site.
- Regenerate some aspen, white birch and red oak stands to maintain this component of the northern hardwood landscape. Decisions will be made based on the stand characteristics as well as the landscape level composition and goals.
- In portions of the actively managed areas of the North Bass Lake West, Catherine Lake, and Jute Lake sites, encourage research in partnership with other Department programs or cooperators to determine techniques for hemlock regeneration. Use the passively managed ecological reference area as control sites.
- On all of the management area, including the ecological reference sites, to the degree possible, use the existing trail network to provide public access for education and ecological interpretation.

Table 2.9 Area 9- Hemlock Northern Hardwoods, Current and desired future conditions for community types in acres and percent of total.

Community Type	Current		Desired Future Condition	
	Acres	% of Total Area	Acres	% of Total Area
Aspen	133	3%	90	2%
Grass Openings	18	1%	18	1%
Forested wetlands	758	20%	758	20%
Hemlock Hardwoods	925	24%	925	24%
Northern Hardwoods	1,167	31%	1,166	31%
Non Classified	53	1%	53	1%
Red and White Pine	14	1%	94	3%
Red Oak	100	3%	60	2%
Fir-Spruce	120	3%	80	2%
Unforested Wetlands	354	9%	354	9%
White Birch	156	4%	200	5%
TOTAL	**3,798**	**100.00%**	**3,798**	**100.00%**

Not Classified category contains acres of lakeshore under passive management.

ECOLOGICAL REFERENCE SITES

- Passively manage the four ecological reference sites; part of Catherine Lake, North Bass Lake West, Sweeney Lake, and Tomahawk Lake Hemlocks. The use of active management to control of invasive plants and to maintain public safety on public use areas is allowed. Salvage will not generally be conducted in the passive areas. Exceptions to salvage restrictions because of statutory responsibilities for fire protection or forest pest control may be granted after review by an interdisciplinary team.

STATE NATURAL AREA DESIGNATION

See State Natural Area discussion in the Appendix for detailed information.

Proposed overlay designations for State Natural Area would occur for Catherine Lake Hemlock-Hardwoods (867 acres, includes 33 lake and 40 private acres), DuPage Lake, which includes the passively managed portion of North Bass Lake West (213 acres) and Tomahawk Lake Hemlocks (226 acres).

Note: Inclusion of private acres in no way inhibit the owners from conducting legal management activities on their land, nor does it inhibit them from selling their land to whomever they desire. However, if the owner wishes to cooperate with the Department in management plan or acquisition, the Department would work with those landowners

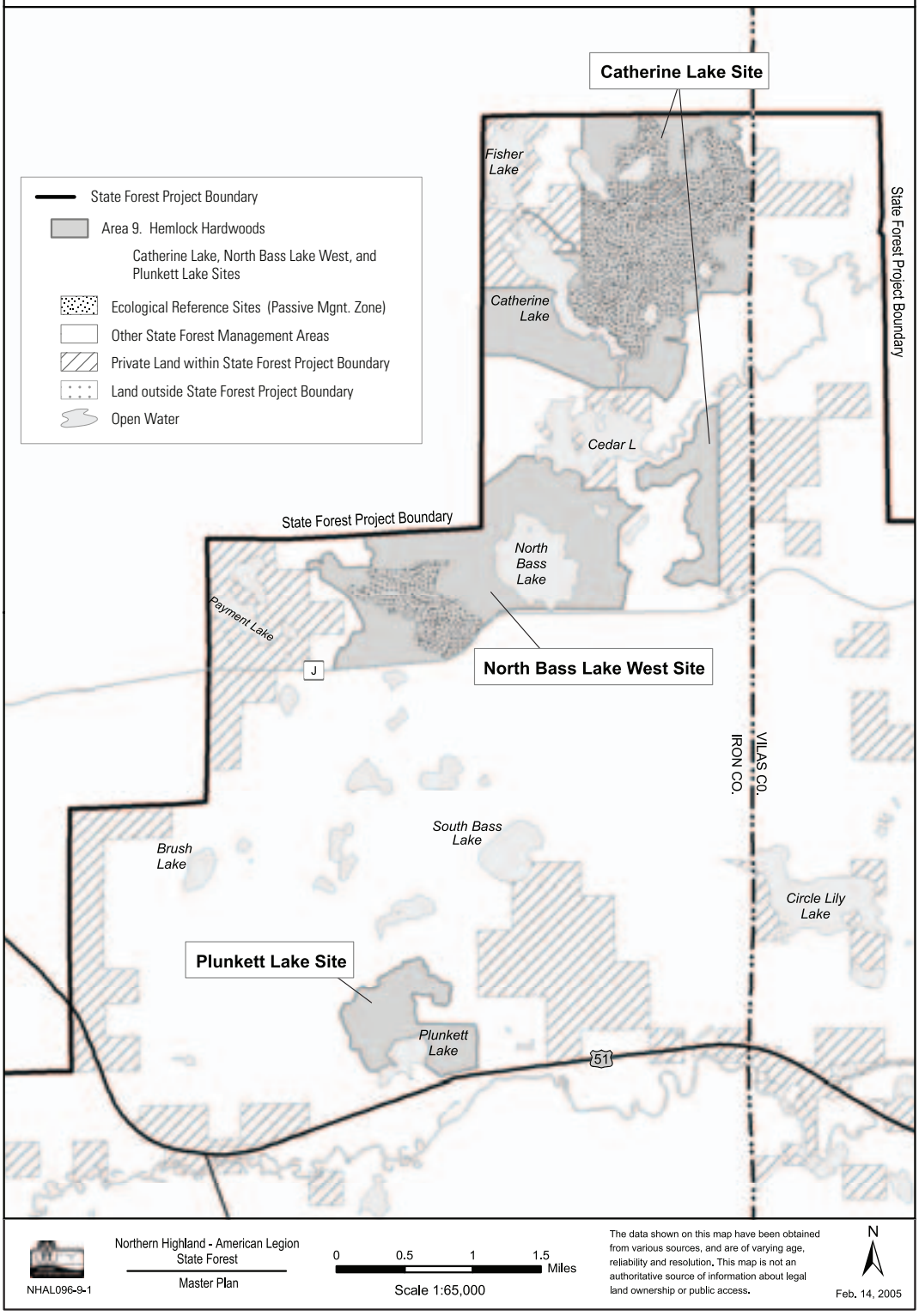
AREA 9 Native Community Management Classification

HEMLOCK/NORTHERN HARDWOOD

Native Community Management Classification

Map 13. Area 9 - Hemlock Hardwoods

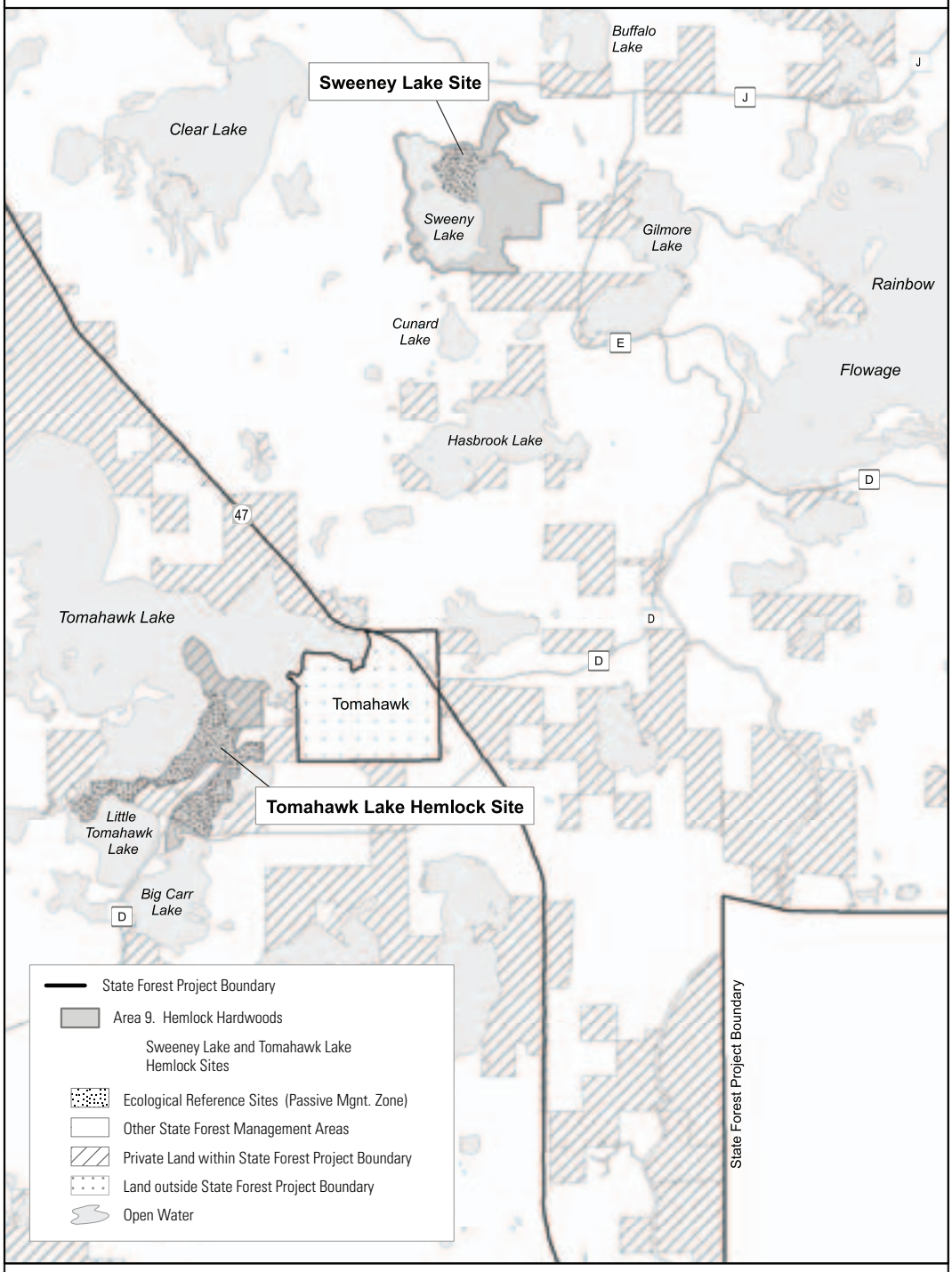
Catherine Lake, North Bass Lake West and Plunkett Lake Sites



Native Community Management Classification

Map 14. Area 9 - Hemlock Hardwoods

Sweeney Lake and Tomahawk Lake Hemlock Sites



Northern Highland - American Legion State Forest
Master Plan

NHAL096-9-2

0 0.5 1 1.5 Miles

Scale 1:65,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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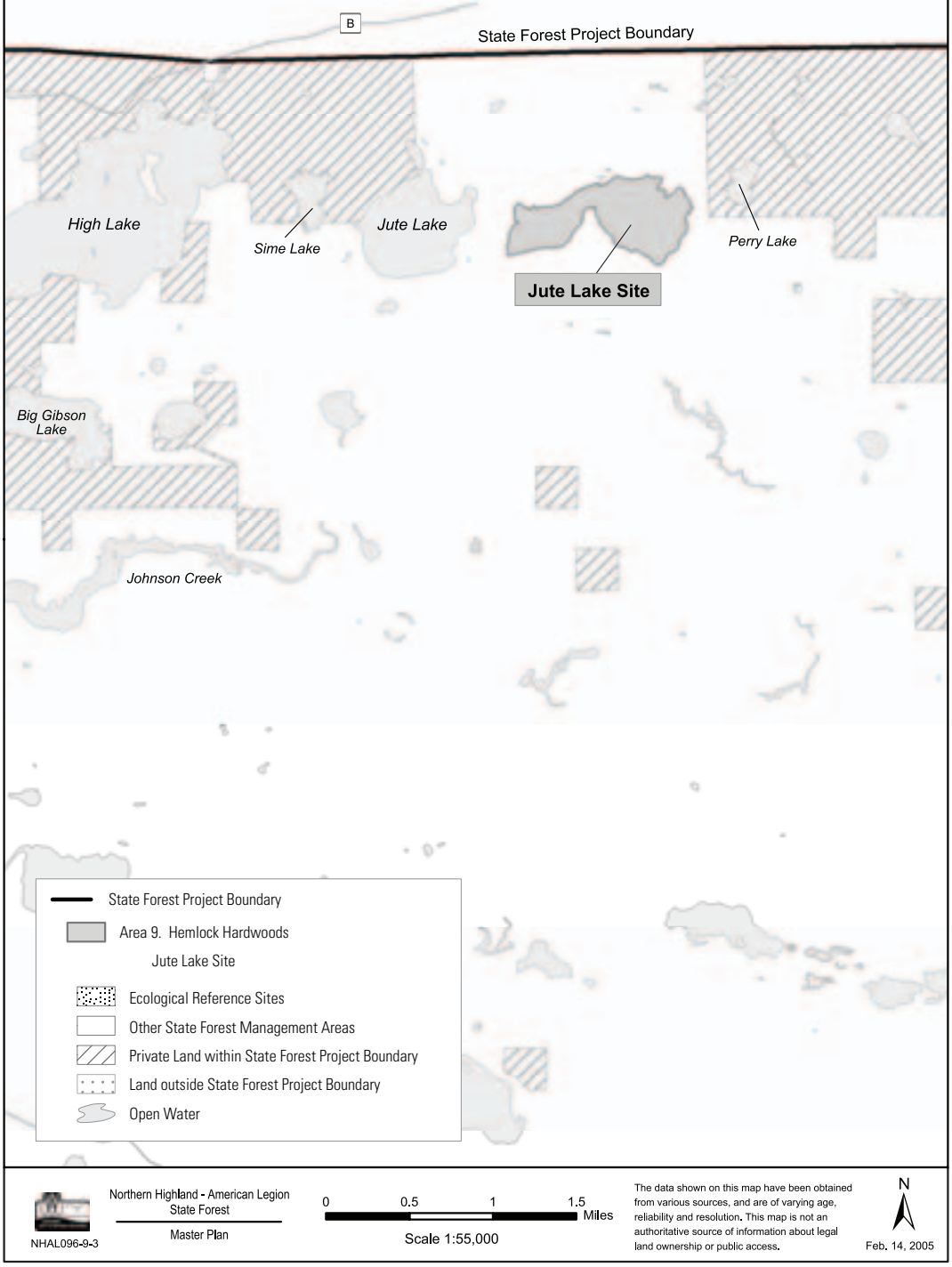
Feb. 17, 2005

Native Community Management Classification

Map 15. Area 9 - Hemlock Hardwoods

Jute Lake Site



Native Community Management Classification

AREA 9

Hemlock/NORTHERN HARDWOOD

AREA 10 Native Community Management Classification

PEATLAND / WETLANDS

This peatland/wetland natural community management area is made up of seven similar sites across the Forest totaling 16,115 acres. These sites have significant ecological qualities such as exceptional concentrations of rare species and/or contain some of the best examples of representative natural features. These peatland sites are composed primarily of open bog and fen systems and their corresponding adjacent wetland communities, soils and topography. In some cases, the sites also contain some upland areas within their boundaries. These sites host a large portion of the rare species found on the State Forest. Also found within some sites is the very rare boreal rich fen natural community. These sites are found on a wide variety of landforms and soils, and are located throughout the State Forest. The primary soil types are lowland acid and non-acid organic peat.

The majority of these lowland sites contain either open wetland or non-merchantable conifer forests. They also contain some significant cedar swamp conifer and swamp hardwood forests. The upland areas contain a mixed composition of forests of aspen, white birch, fir-spruce, jack pine and red and white pine. Hemlock hardwoods and northern hardwoods can also be found in certain areas.

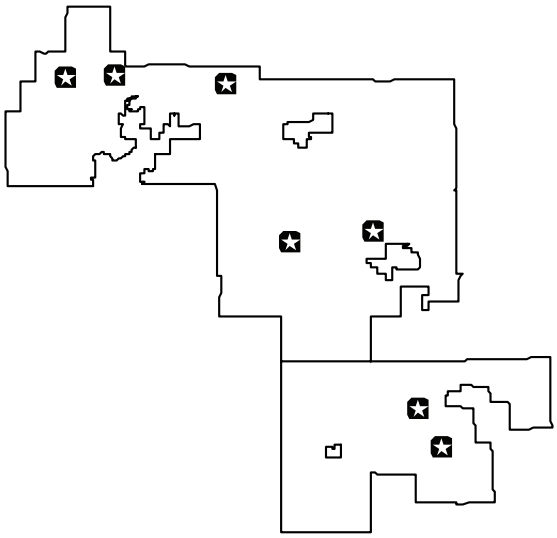
The diverse peatlands support a lush ground layer of mosses, goldenthread, fringed polygala, twinflower, cranberries, and snowberry. A few pine plantations also exist within the boundary. Habitat types on the uplands span the range from low to relatively high fertility.

The wetland areas exist today much as they were at the time of European settlement. Historically, fire probably played a significant role in the species composition of these areas as well as wind events and periodic droughts, but to a lesser extent.

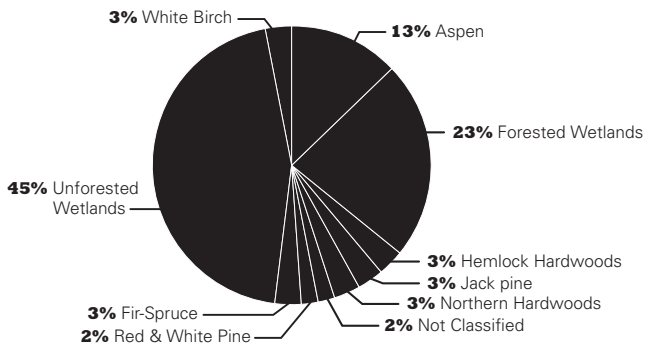
AREA 10 SUMMARY

- This area is approximately 16,115 acres in size with 14,555 acres in state ownership.
- Management of high quality peatland sites for ecological, water quality and rare species habitat values.
- Maintenance of the overall scenic nature of the rivers, wetlands, and lakes, and old growth characteristics.

AREA 10 LOCATOR MAP

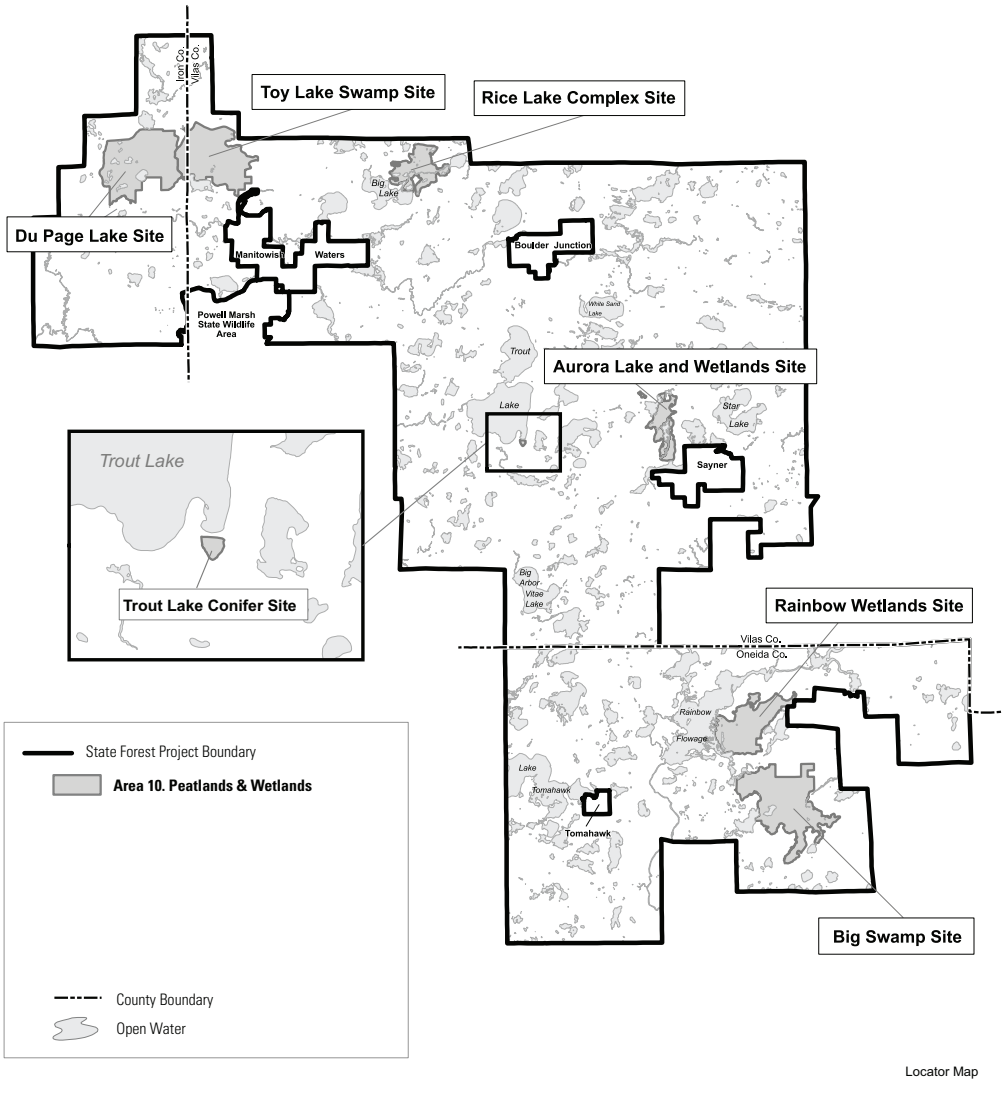


AREA 10 CURRENT LAND COVER



Native Community Management Classification

Map 16. Area 10 - Peatlands & Wetlands



NHAL096-10-0

Northern Highland - American Legion State Forest
Master Plan

0 3 6 9 Miles
Scale 1:400,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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Feb. 14, 2005

AREA 10 Native Community Management Classification

PEATLAND / WETLANDS

LONG-TERM OBJECTIVES (100 YEARS)

- Maintain a high quality series of sites that support old-growth white cedar, black spruce, tamarack, and swamp hardwoods. These sites would also support other high quality peatland communities, such as open bog, muskeg, boreal rich fen, sedge meadows, and open water communities. Interspersed in the lowlands are uplands old-growth communities of northern hardwood, hemlock-hardwood, white pine, red pine, and fir-spruce.
- Protect ecological, water quality and rare species habitat values.
- Use the sites for research, education, and ecological interpretation as well as demonstration areas of peatlands management.

SHORT-TERM OBJECTIVES (50 YEARS)

Maintain seven passively managed ecological reference sites; DuPage Lake (2,992 acres, includes lake acres), Toy Lake (2,815 acres, includes lake and private acres), Rice Creek (495 acres, includes stream and private acres), Aurora Lake (834 acres, includes lake acres), Trout Lake Conifer Swamp (22 acres), Rainbow Wetlands (2,323 acres) and Big Swamp (2,513 acres, includes lake acres). These passively managed ecological reference sites harbor the highest concentrations of rare species and least disturbed examples of peatland/wetlands.

- Outside of the ecological reference sites, use active management to increase the age, diversify the composition, and reduce fragmentation of the forested patches. Maintain aspen and white birch in accessible areas in the active management zone. On suitable sites increase the abundance of northern hardwood, hemlock hardwood, fir-spruce, red and white pine through active management.
- Maintain limited low-impact pubic access and provide opportunities for education and interpretation of these natural communities and habitats.
- Provide for research, ecological interpretation, and education, including demonstrations of peatlands management.

RESOURCE MANAGEMENT PRESCRIPTIONS

The General Timber Type Management Prescriptions and their all of their associated management activities (described at the beginning of the Land Management Section) apply, except as limited by the prescriptions below:

- Manage upland sites for a variety of species types and age classes using the General Forest Management Prescriptions with special emphasis on safeguarding the area's unique wetland characteristics and water quality.
- Manage upland sites with red and white pine, northern hardwood-hemlock or spruce-fir to maintain or increase their abundance.
- Use experimental techniques in addition to standard management practices, such as the thinning of even-aged types, to hasten the conversion to longer-lived and uneven-aged species on ecologically appropriate upland sites.
- Manage stands isolated by wetlands only under frozen conditions.
- Passively manage all open, unforested wetland communities. Perform no active forest management, including salvage, except to clear trails or roads and then leave the material on site. Exceptions to salvage restrictions because of statutory responsibilities for fire protection or forest pest control may be granted after review by an interdisciplinary team.

On all of the management area, including the ecological reference sites:

- Actively suppress forest fires, and restore any soil to its original topography that's disturbed by suppression activities. The Department shall develop a wild fire response plan that minimizes adverse soil disturbance, while assuring public safety. Develop a disturbed soil planting and monitoring strategy by an integrated team.
- Maintain existing boat landings.
- Remove invasive species, especially common or glossy buckthorn, Eurasian water milfoil, and garlic mustard by cutting, pulling or limited herbicide application.
- To the degree possible, use the existing trail network to provide public access for education and ecological interpretation.
- Other management activities that may be conducted as needed include the removal of individual hazard trees along trails, roads, and public access points; maintenance of existing roads and public use access, including mowing and brush cutting; development activities

Table 2.10 Area 10- Peatlands/ Wetlands, Current and desired future conditions for community types in acres and percent of total.

Community Type	Current		Desired Future Condition	
	Acres	% of Total Area	Acres	% of Total Area
Aspen	1,845	13%	1,460	10%
Forested wetlands	3,366	23%	3,486	24%
Hemlock Hardwoods	439	3%	579	4%
Jack Pine	354	2%	354	2%
Northern Hardwoods	478	3%	679	5%
Non Classified	344	2%	100	1%
Red and White Pine	342	2%	442	3%
Fir-Spruce	393	3%	477	3%
Unforested Wetlands	6,554	45%	6,678	46%
White Birch	440	4%	300	2%
TOTAL	**14,555**	**100.00%**	**14,555**	**100.00%**

The decrease in the Not Classified category describes the acres that went into Forested-wetlands and non-forested-wetlands. The increase and decrease of Forested and Unforested wetlands is due to natural succession or natural catastrophes.

necessary for stated improvements to public use facilities; fish management actions and prescriptions; and monitoring and research activities.

ECOLOGICAL REFERENCE SITES

- Passively manage the ecological reference sites. Perform no active forest management, including salvage, except to clear trails or roads and then leave the material on site. Exceptions to salvage restrictions because of statutory responsibilities for fire protection or forest pest control may be granted after review by an interdisciplinary team.

OTHER SITE SPECIFIC MANAGEMENT

- In the aspen and birch stand near the entrance road to DuPage Lake, on two stands along County Highway J in the Toy Lake Swamp, and on other ecologically appropriate sites across the actively managed area, manage to convert these stands to longer-lived forest types.
- Investigate the feasibility of rerouting the snowmobile trail that travels through the eastern portion of Toy Lake Swamp to uplands outside the swamp. Maintain the same number of miles of trail over time.
- Develop a boardwalk-hiking trail (contingent on adequate funding for such) into Trout Lake Conifer Swamp. The short loop boardwalk is to provide educational and interpretive access to the white cedar swamp. Connect the hiking trail with the existing paved Boulder Junction bicycle path.
- Manage wild, wilderness, and scenic lakes consistent with the requirements for each lake designation. Three designated wilderness, three wild lakes, and part of one scenic lake lie within this management area. All, except one wild lake, are within the ecological reference site. The prescribed passive management is fully compatible with the management requirements for a wild, wilderness, and scenic lakes. For the lake that is not within an ecological reference site, maintain a 400 ft. passive management zone buffer around the lake. See the wild lakes management zone section for information on the non-vegetation management requirements within the wild lake zone.

STATE NATURAL AREA DESIGNATION

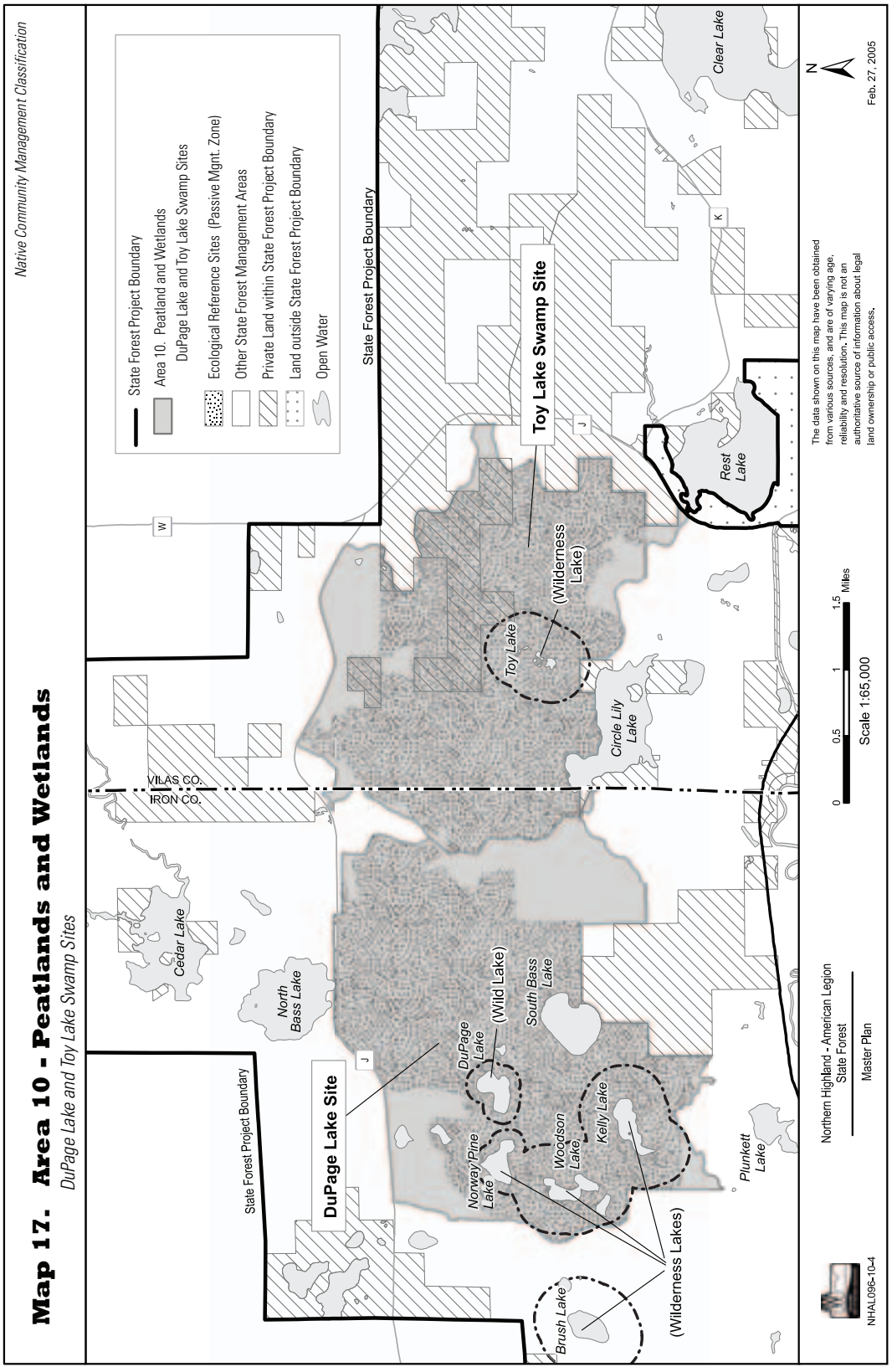
See State Natural Area discussion in the Appendix for detailed information.

Proposed overlay designations for State Natural Area would occur for DuPage Lake Peatlands (3,205 acres, includes 230 lake acres), Toy Lake Swamp (2,803 acres, includes 124 lake acres and 506 private acres that would be added upon acquisition), Rice Creek (426 acres, includes 22 stream acres and 40 private acres that would be added upon acquisition), Aurora Lake (834 acres, includes 301 lake acres), Trout Lake Conifer Swamp (22 acres), Rainbow Wetlands (2,323 acres), and Big Swamp (2,513 acres, includes 79 lake acres).

Note: Inclusion of private acres in no way inhibit the owners from conducting legal management activities on their land, nor does it inhibit them from selling their land to whomever they desire. However, if the owner wishes to cooperate with the Department in management plan or acquisition, the Department would work with those landowners

AREA 10 Native Community Management Classification

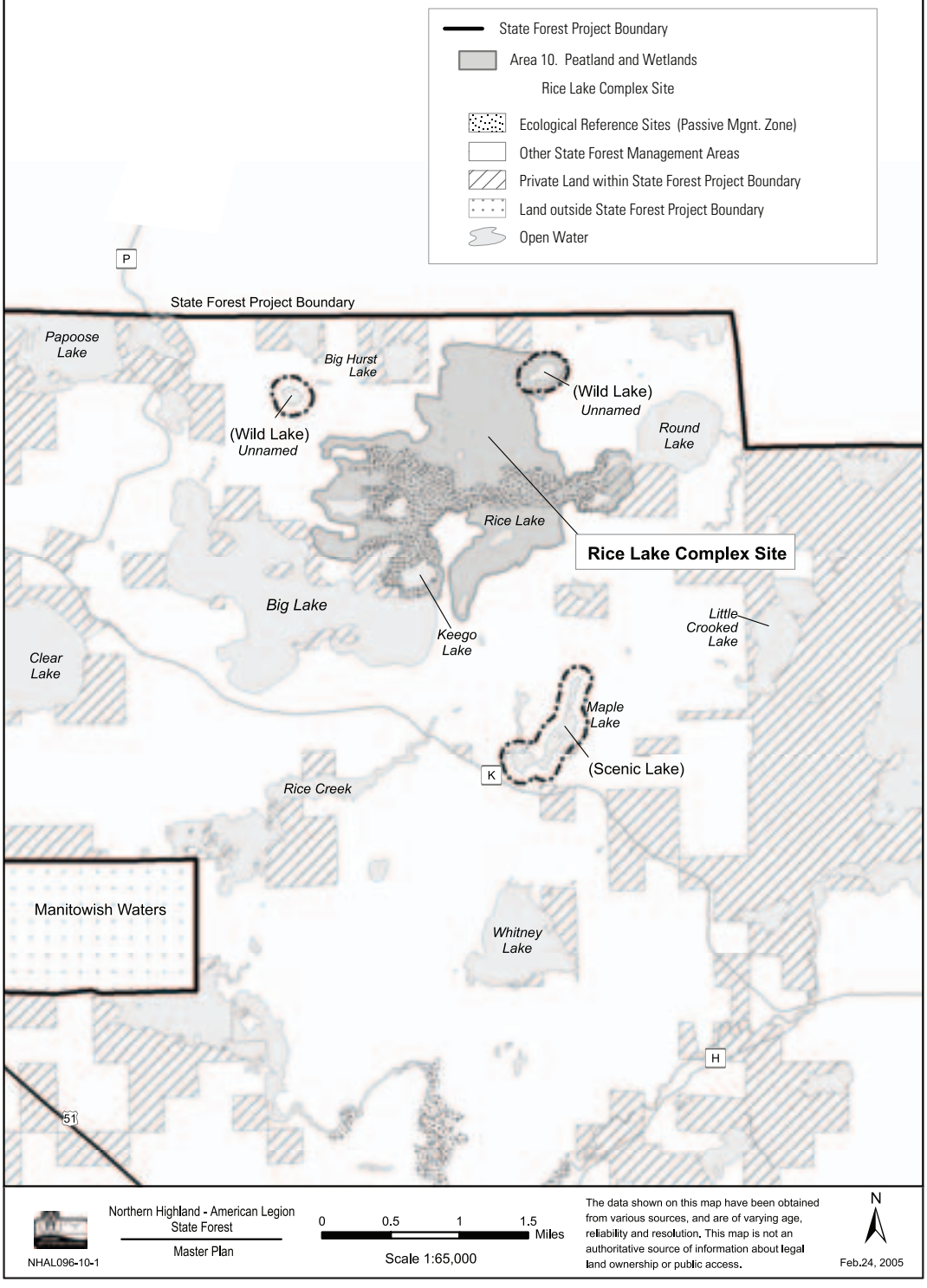
PEATLAND / WETLANDS

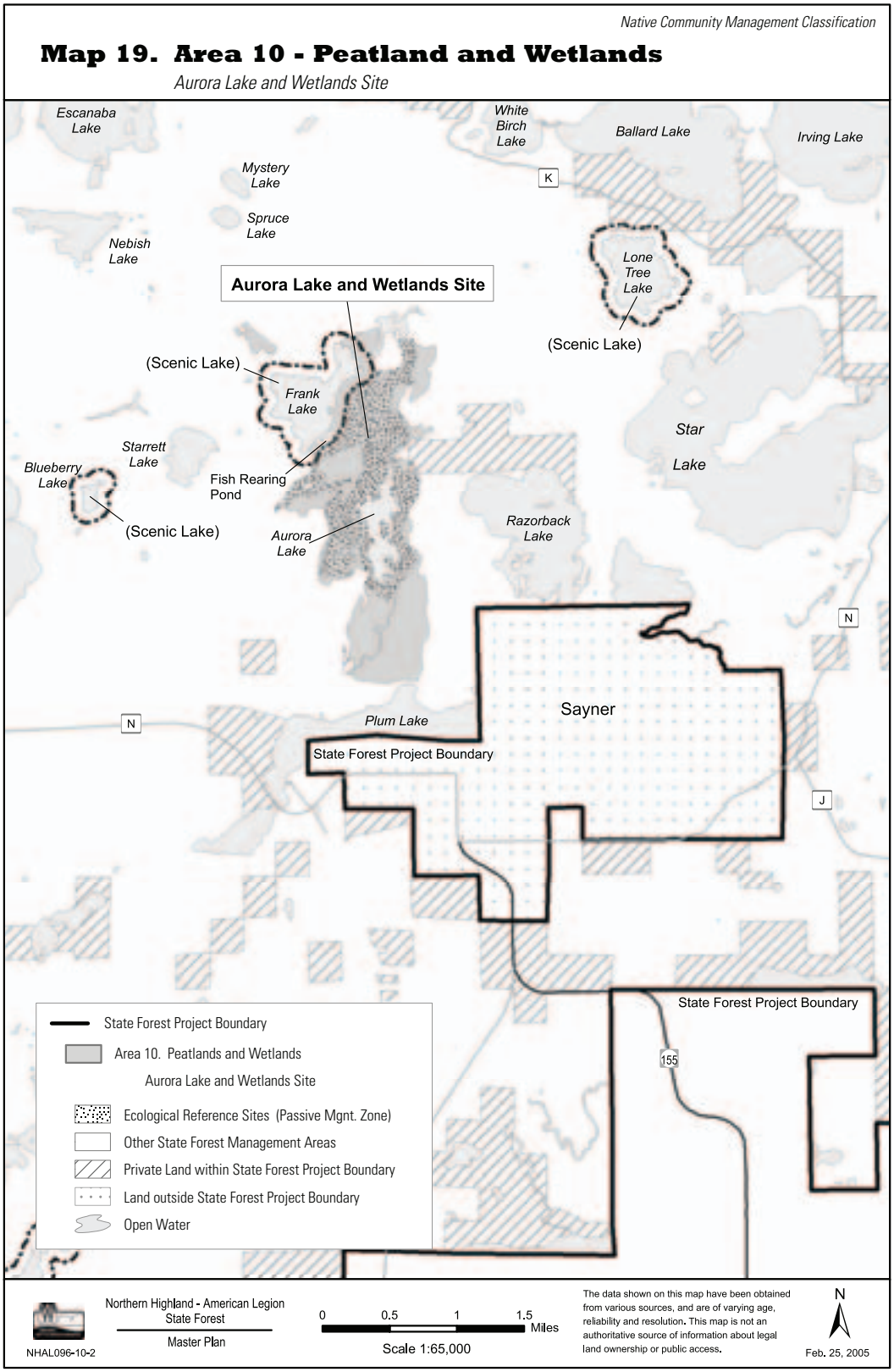


Native Community Management Classification

Map 18. Area 10 - Peatland and Wetlands

Rice Lake Complex Site

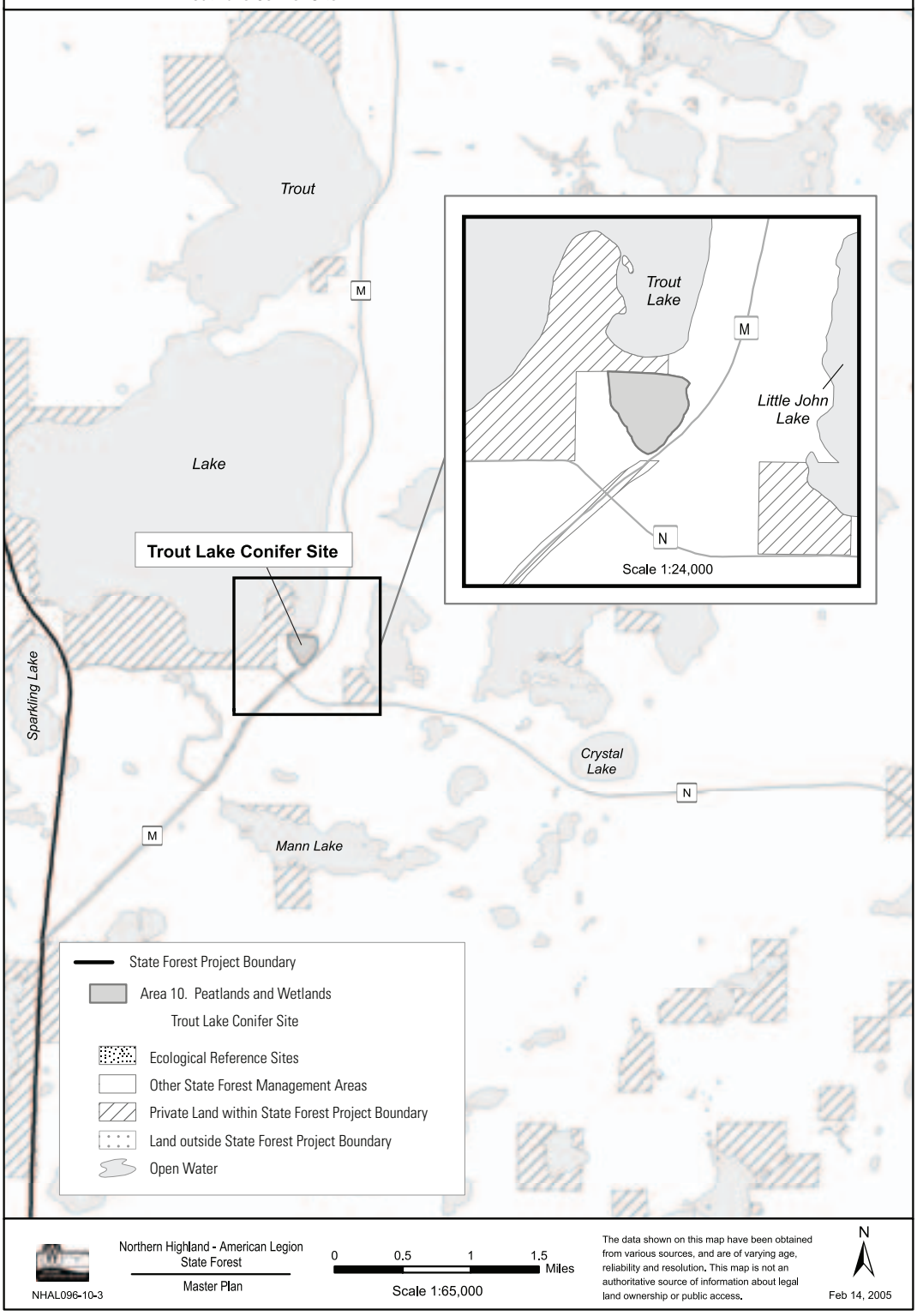



Native Community Management Classification
Map 19. Area 10 - Peatland and Wetlands
Aurora Lake and Wetlands Site
Escanaba Lake
White Birch Lake
Ballard Lake
Irving Lake
Mystery Lake
Spruce Lake
Nebish Lake
Aurora Lake and Wetlands Site
Lone Tree Lake
(Scenic Lake)
(Scenic Lake)
Frank Lake
Star Lake
Starrett Lake
Blueberry Lake
Fish Rearing Pond
(Scenic Lake)
Aurora Lake
Razorback Lake
K
N
N
J
Plum Lake
Sayner
State Forest Project Boundary
State Forest Project Boundary
155
State Forest Project Boundary
Area 10. Peatlands and Wetlands
Aurora Lake and Wetlands Site
Ecological Reference Sites (Passive Mgnt. Zone)
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water
Northern Highland - American Legion State Forest
Master Plan
NHAL096-10-2
0 0.5 1 1.5 Miles
Scale 1:65,000
The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.
N
Feb. 25, 2005

Native Community Management Classification

Map 20. Area 10 - Peatland and Wetlands

Trout Lake Conifer Site



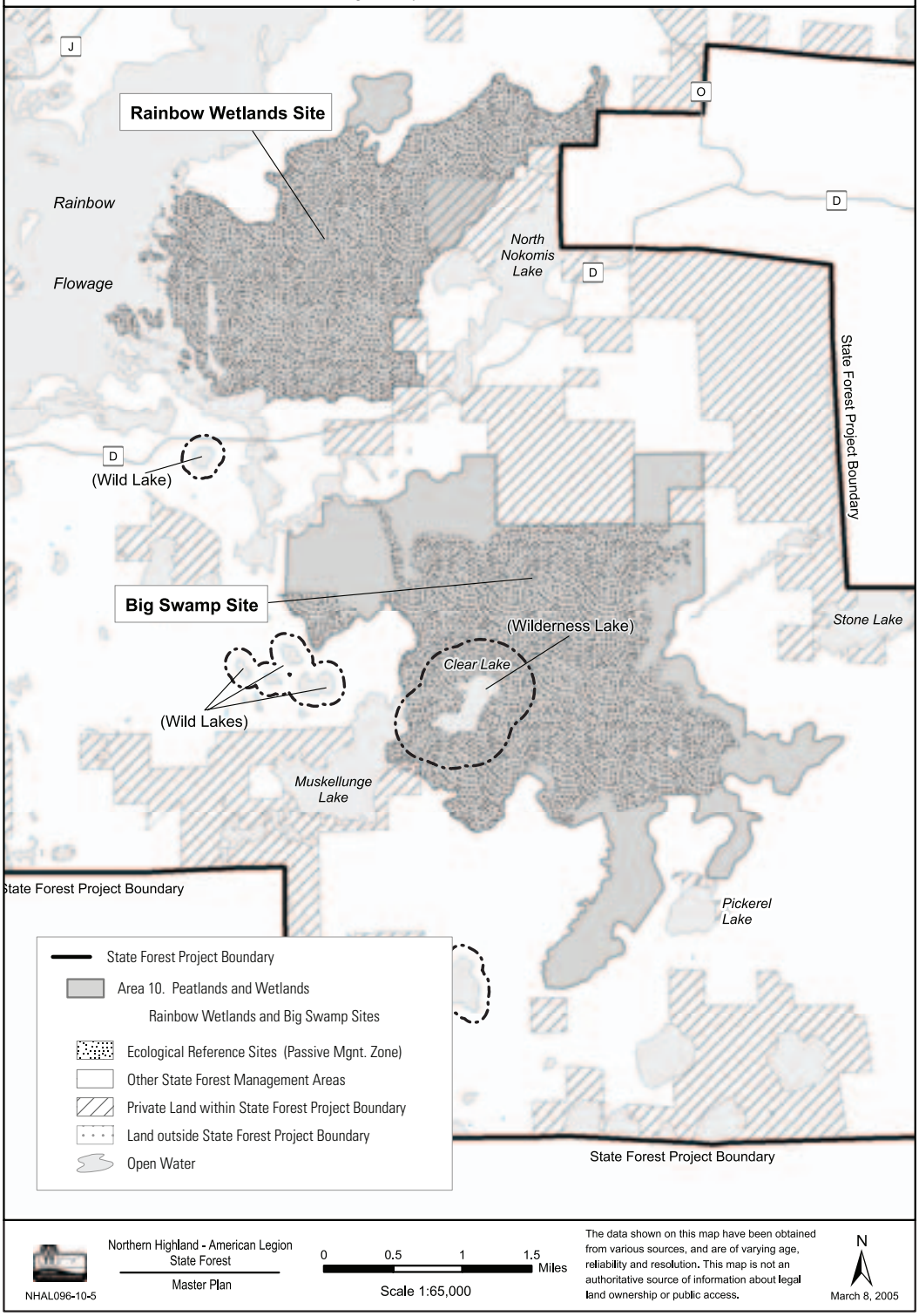
AREA 10 Native Community Management Classification

PEATLAND / WETLANDS

Native Community Management Classification

Map 21. Area 10 - Peatland and Wetlands

Rainbow Wetlands and Big Swamp Sites



Native Community Management Classification

PEATLAND / WETLANDS

AREA 10

AREA 11 Native Community Management Classification

RED AND WHITE PINE

The Red Pine-White Pine Native Community Management Area is comprised of eight sites Papoose Creek, High Lake, Camp Lake, Mud Creek Springs, Buffalo Lake, Swanson Lake and Pines, Helen Lake and Stone Lake Pines distributed across the NH-AL. Together these sites total 3,958 acres. These sites are found on sandy soils in a rolling to level outwash topography with kettle lakes and wetlands which is typical of most of the NH-AL. Cathedral Pines is a comparable site but will be managed passively as part of the Trout Lake Administrative Area.

The sites within this management area contain the largest patches of older red and white pine within the younger mixed forest matrix. The uplands within these sites support primarily red and white pine with aspen as the second largest upland covertype. Common understory plants include shrubs such as hazelnut, juneberry, low sweet blueberry, sweetfern, and maple-leaf viburnum, and herbs such as wild lily-of-the-valley, bracken fern, grasses and sedges, and big leaf aster. Numerous kettle wetlands are interspersed and contain open bog, poor fen, muskeg, black spruce swamp, tamarack swamp, alder thicket, and spring ponds.

At European settlement, the composition of these sites was likely similar to the dominant historic NH-AL profile of an upland forest with white and red pine as primary species and aspen and white birch as important secondary species. Many pine stands were up to 200 years old with some trees surviving as long as 300 years.

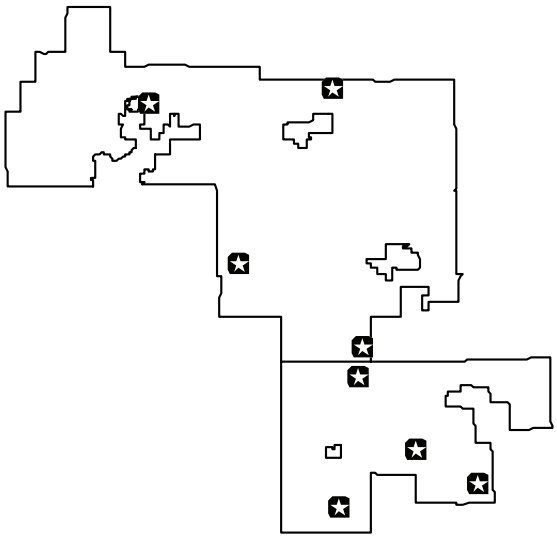
This ecological landscape was subjected to and evolved with fire and wind disturbance for millennia. These disturbance events oft times set forest succession back to the starting point, but many areas, some for centuries, were missed by these disturbance events because of the protection afforded by lakes and wetlands.

Big tree silviculture techniques will be used in the forest production areas to manage for mixed forests with biologically mature white pine, red pine and red oak. These forests will have abundant early successional aspen and white birch trees growing under scattered big, old pines and red oaks. In contrast, the red and white pine native community areas will have a much larger component of red and white pine and will have a larger component of dead trees and course woody habitat. A few places will receive more intense of a fire which will allow development of a savanna-like community with larger diameter pines, scattered smaller pines, fewer shrubs or hardwood saplings with an abundance of grasses, heaths and flowers.

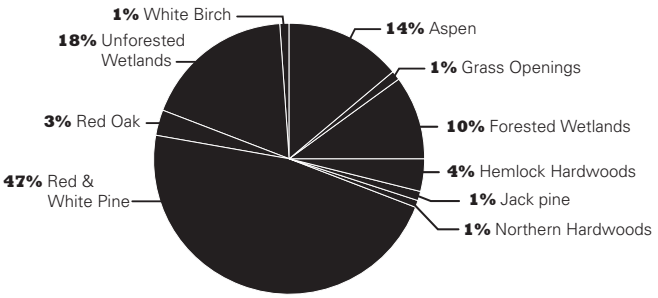
AREA 11 SUMMARY

- This area is approximately 4,316 acres in size with 3,958 acres in state ownership.
- Management for old-growth red and white pine and scenic qualities.
- Opportunity to use prescribed fires as a management strategy in a landscape shaped by fire for millennia.

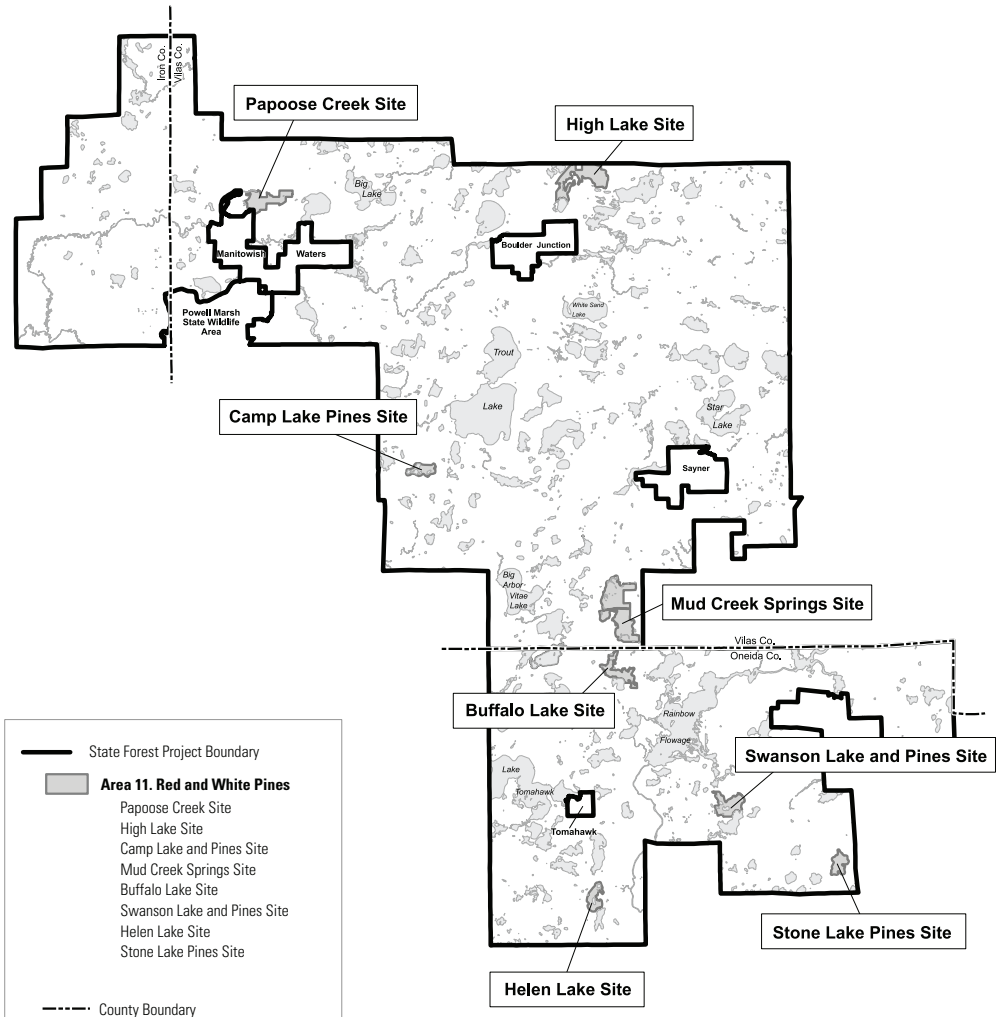
AREA 11 LOCATOR MAP



AREA 11 CURRENT LAND COVER



Map 22. Area 11 - Red and White Pines



0 3 6 9 Miles

Scale 1:400,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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Feb. 14, 2005

NHAL096-11-0

AREA 11

Native Community Management Classification

RED AND WHITE PINE

LONG-TERM MANAGEMENT OBJECTIVES (100 YEAR)

- Develop and maintain sites across the NH-AL landscape that represent old-growth red and white pine characteristics.
- Develop and maintain sites that have open woodland (savanna) structure containing large conifers, few understory deciduous trees and numerous grasses, heaths, and flowers in the understory.
- Provide opportunities on these sites for research, education, and ecological interpretation using, and demonstrations of old-growth red and white pine management.
- Maintain the high quality of the forested and unforested wetlands interspersed throughout these sites.

SHORT-TERM MANAGEMENT OBJECTIVES (50 YEARS)

- Develop a mixed pine forest having a greater abundance of pine that is dominated by old trees, large amounts of coarse woody debris, numerous standing dead snags, and a wide age diversity of trees.
- Maintain three passively managed ecological reference sites. They are the 211 acre Camp Lake and Pines (includes lake acres), a 306 acre part of Swanson Lake and Pines (includes 36 lake acres), and the 199 acre Stone Lake Pines site. These sites serve as ecological reference areas for adaptive old-growth management activities elsewhere in the pine management area. Use monitoring information from these existing old-growth reference stands on changes in composition and structure over time to aid in future management decisions.
- Develop two actively managed ecological reference sites for pine woodland community at Papoose Creek Pines (approximately 533 acres) and at Swanson Lake and Pines (approximately 32 acres).

Management for Red and White Pine Native Community Management Area emphasizes the development of old growth pine and mixed forest communities using both passive and active techniques as outlined below.

RESOURCE MANAGEMENT PRESCRIPTIONS

The General Timber Type Management Prescriptions and their all of their associated management activities (described at the beginning of the Land Management Section) apply, except as limited by the prescriptions below:

- Adapt the General Forest Management Prescriptions for each stand to create, enhance and maintain old growth red/white pine characteristics, including, a diversity of tree ages and stand sizes, providing coarse woody debris and snag densities. Age structure for the species should fall into the average life expectancy consistent with the local site quality.
- Manage to various patch sizes using techniques for regeneration harvests to achieve ecological objectives. Such techniques may include use of large and small patch clear cuts or group selection, shelterwood harvest, seed tree retention, ground disturbance, tree planting or prescribed burning either alone or in combination with the above treatments.
- Convert some deciduous forest types to pine types on appropriate sites, and manage pine plantations toward a more natural density and composition.
- Actively manage that part of the Swanson Lake and Pines site that was salvaged after the 1999 blowdown, (passively manage the unsalvaged portion as described in the ecological reference site section).
- Hawk Lake and Helen Lake are designated wild lakes within the Helen Lake site. Passively manage a 400 foot buffer area around these lakes. See the wild lakes management zone section for information on the non-vegetation management requirements within the wild lake zone.

On all of the management area, including the ecological reference sites:

- Develop research in partnership with other staff or cooperators to document regeneration and development of old growth characteristics. Using the ecological reference sites as controls, manipulate the other areas to test the management methods.
- Salvage trees damaged by wind, ice, fire, and insects after consultation with managers from affected Department programs.

Table 2.11 Area 10- Red and White Pine, Current and desired future conditions for community types in acres and percent of total.

Community Type	Current		Desired Future Condition	
	Acres	% of Total Area	Acres	% of Total Area
Aspen	527	14%	400	10%
Grass Openings	24	1%	24	1%
Forested Wetlands	379	10%	379	10%
Hemlock-Hardwood	141	4%	140	4%
Jack Pine	37	1%	40	1%
Northern Hardwoods	56	1%	60	2%
Not Classified	206	0%	0	0%
Red and White Pine	1,771	47%	2,144	52%
Red Oak	106	3%	70	2%
Unforested Wetlands	661	18%	661	18%
White Birch	50	1%	40	1%
TOTAL	**3,958**	**100.00%**	**3,958**	**100.00%**

The Not Classified category includes lakeshore areas on Camp Lake and Swanson Lake. Decrease in future acres is due increase in red and white pine cover type.

ECOLOGICAL REFERENCE SITES

A. Camp Lake and Pines, part of Swanson Lake and Pines, and Stone Lake Pines

- Passively manage the three ecological reference sites except for the control of invasive plants and to maintain public use areas. Salvage generally will not be conducted. Exceptions to the salvage restrictions because of statutory responsibilities for fire protection or forest pest control may be granted after review by an interdisciplinary team.
- Develop research in partnership with other staff or cooperators to assess forest sustainability. Compare growth and regeneration in passive and active management areas in addition to the collection of reconnaissance data.
- Three unnamed lakes within the Swanson Lake and Pines Site are designated wild lakes. The prescribed passive management prescribed for this site is fully compatible with the management requirements for a wild lake. See the wild lakes management zone section for information on the non-vegetation management requirements within the wild lake zone.

B. Papoose Creek and part of Swanson Lake and Pines

- Actively manage these two ecological reference sites using prescribed fire along with timber thinning. Develop site-specific goals for composition, regeneration and structure that can be reached through a combination of prescribed fire, timber harvest, ground disturbance or other mechanical methods. Using an integrated team of biologists, foresters and fire control specialists, develop specific strategies to plan, educate and manage fire more effectively as a tool in this landscape.
- Develop prescribed burn prescriptions for the burn management areas. Based on the prescriptions, develop prescribed burning plan and information materials, and conduct open houses meetings before burning to inform forest users and neighbors about the plan and the values of burning.
- Prior to burning and area, reduce fuel loads through timber harvest or mechanical means, and develop firebreaks and other control elements necessary for safe burning. Salvage after blow downs would generally occur to remove potential fuels, which may hamper prescribed fire application.

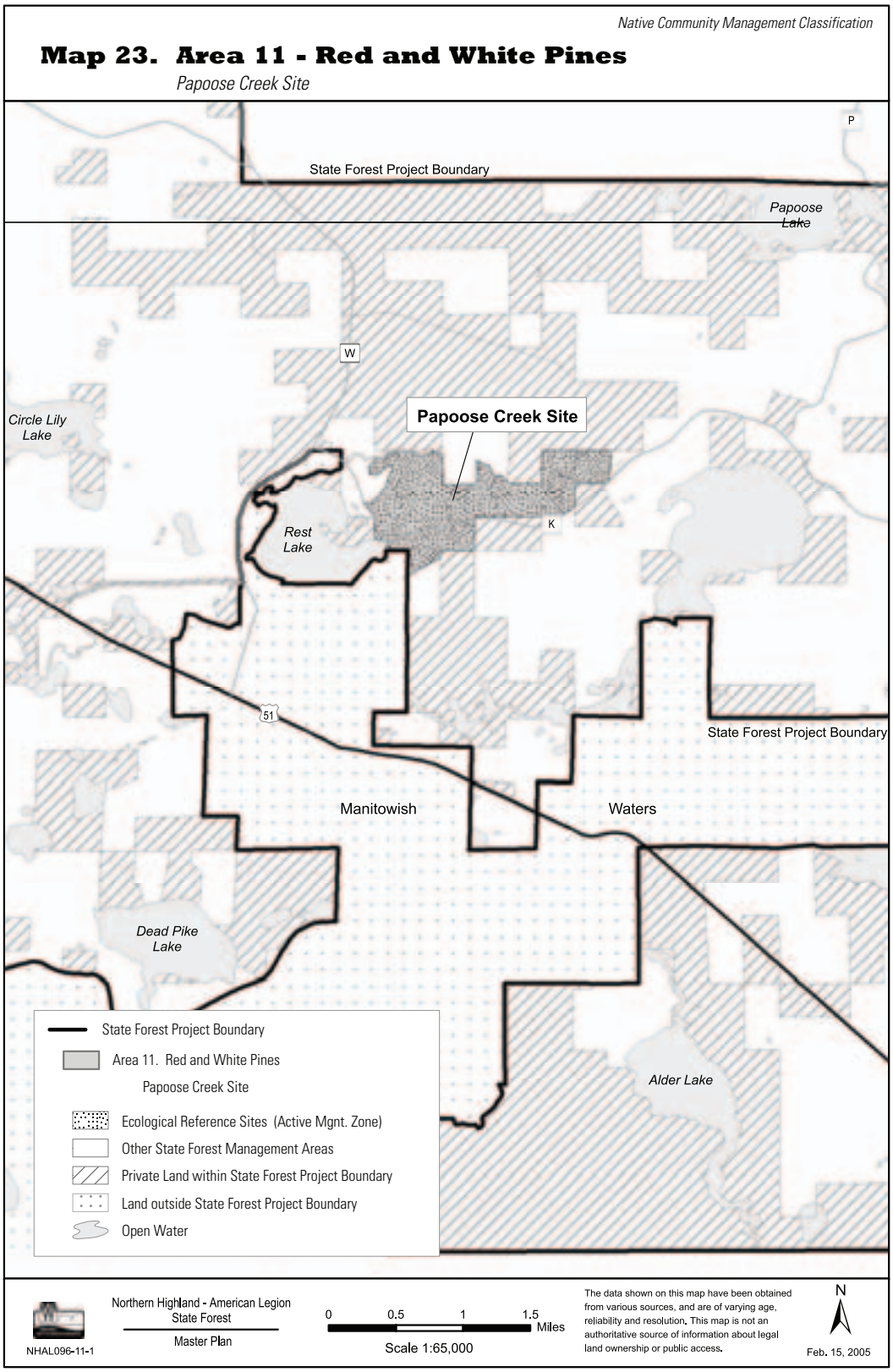
STATE NATURAL AREA DESIGNATION

See State Natural Area discussion in the Appendix for detailed information.

Proposed overlay designations for State Natural Area would occur for Camp Lake and Pines (243 acres, includes 65 lake acres), Papoose Creek Pines (533 acres), Stone Lake Pines (199 acres), and Swanson Lake and Pines would become part of Big Swamp (306 acres, includes 36 lake acres).

AREA 11 Native Community Management Classification

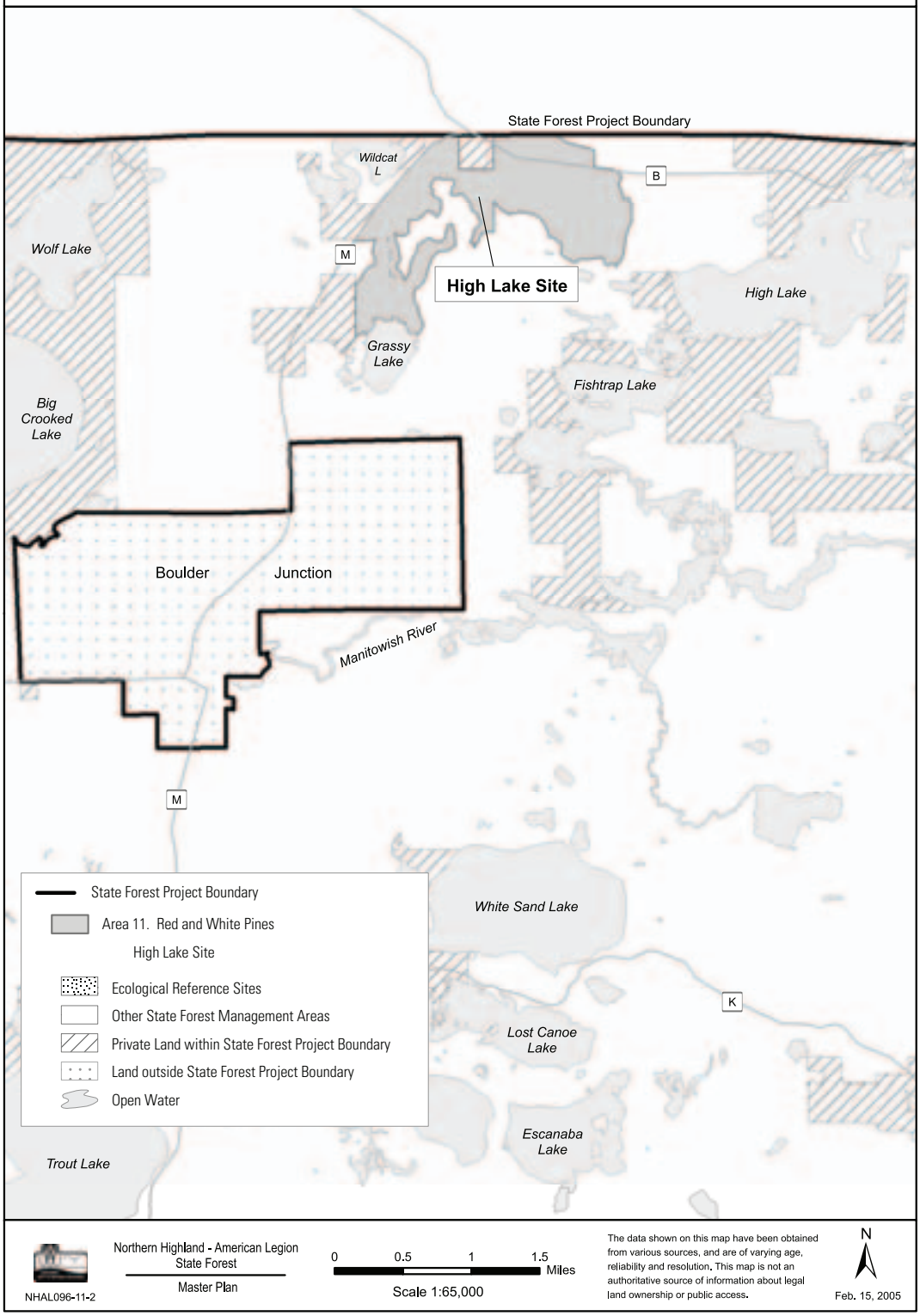
RED AND WHITE PINE



Native Community Management Classification

Map 24. Area 11 - Red and White Pines

High Lake Site



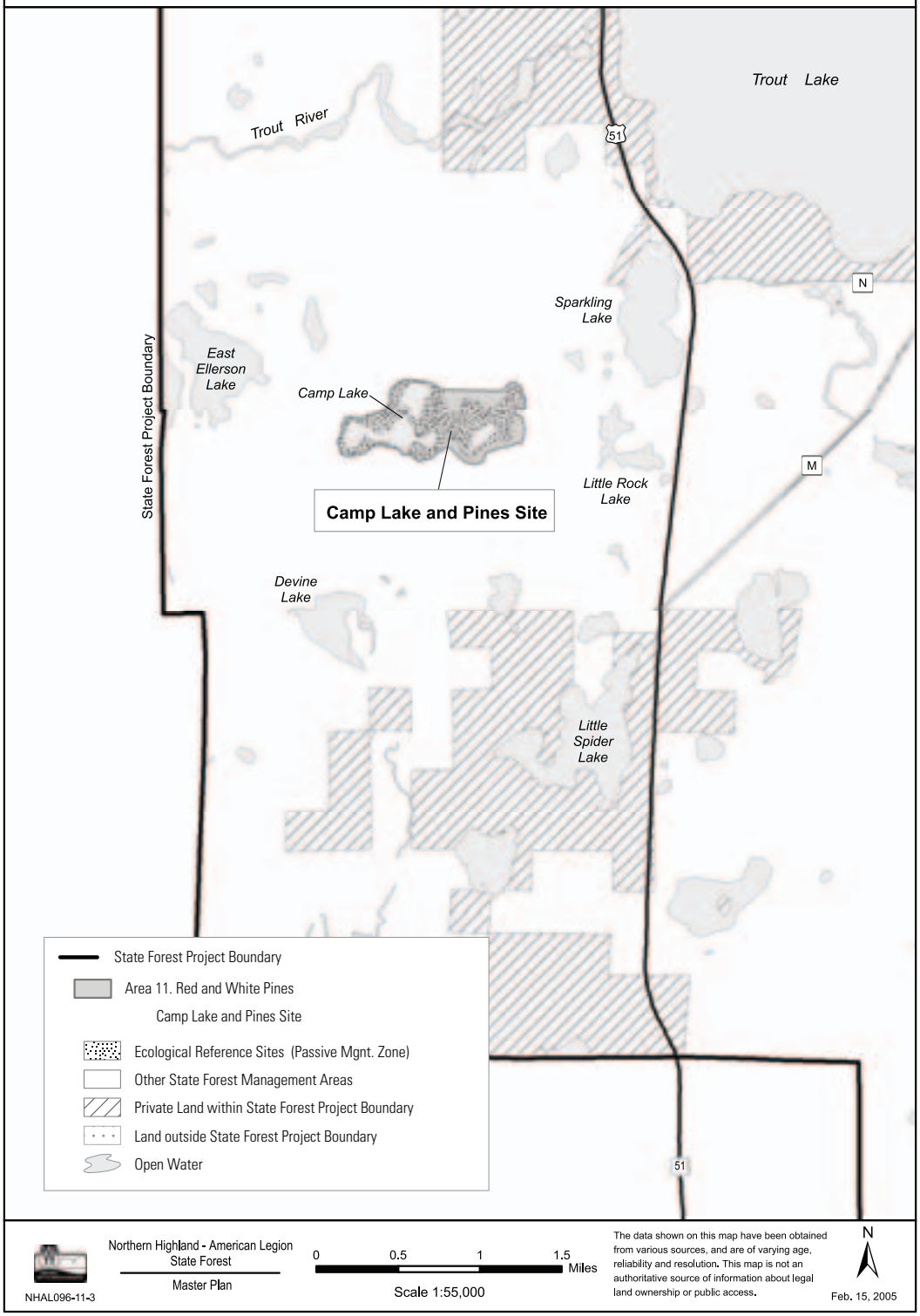
AREA 11 Native Community Management Classification

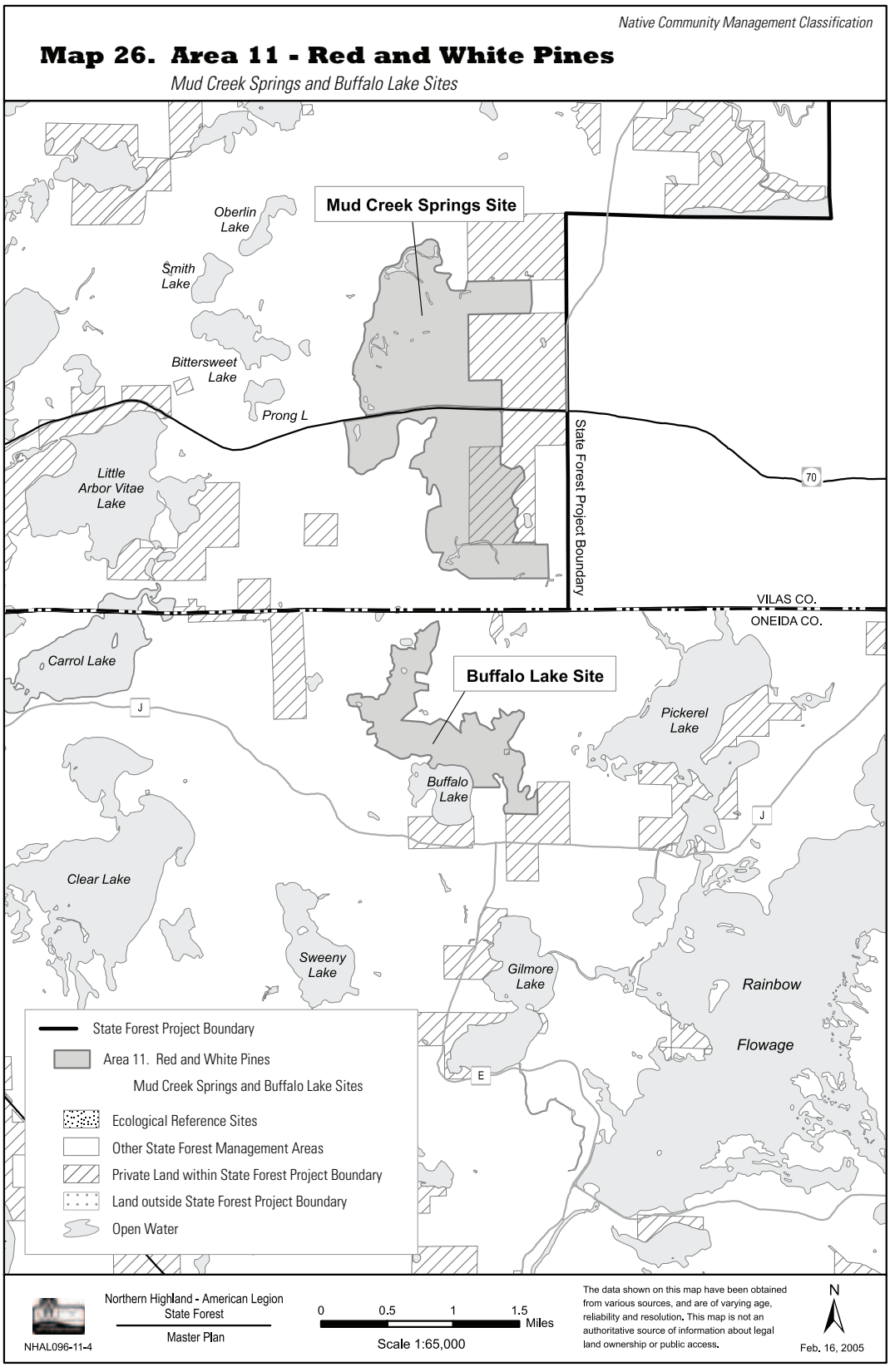
RED AND WHITE PINE

Native Community Management Classification

Map 25. Area 11 - Red and White Pines

Camp Lake and Pines Site




Native Community Management Classification
Map 26. Area 11 - Red and White Pines
Mud Creek Springs and Buffalo Lake Sites
Mud Creek Springs Site
Oberlin Lake
Smith Lake
Bittersweet Lake
Prong L
Little Arbor Vitae Lake
State Forest Project Boundary
70
VILAS CO.
ONEIDA CO.
Buffalo Lake Site
Carrol Lake
J
Pickerel Lake
Buffalo Lake
J
Clear Lake
Sweeny Lake
Gilmore Lake
Rainbow
Flowage
E
State Forest Project Boundary
Area 11. Red and White Pines
Mud Creek Springs and Buffalo Lake Sites
Ecological Reference Sites
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water
Northern Highland - American Legion State Forest
Master Plan
NHAL096-11-4
0 0.5 1 1.5 Miles
Scale 1:65,000
The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.
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Feb. 16, 2005

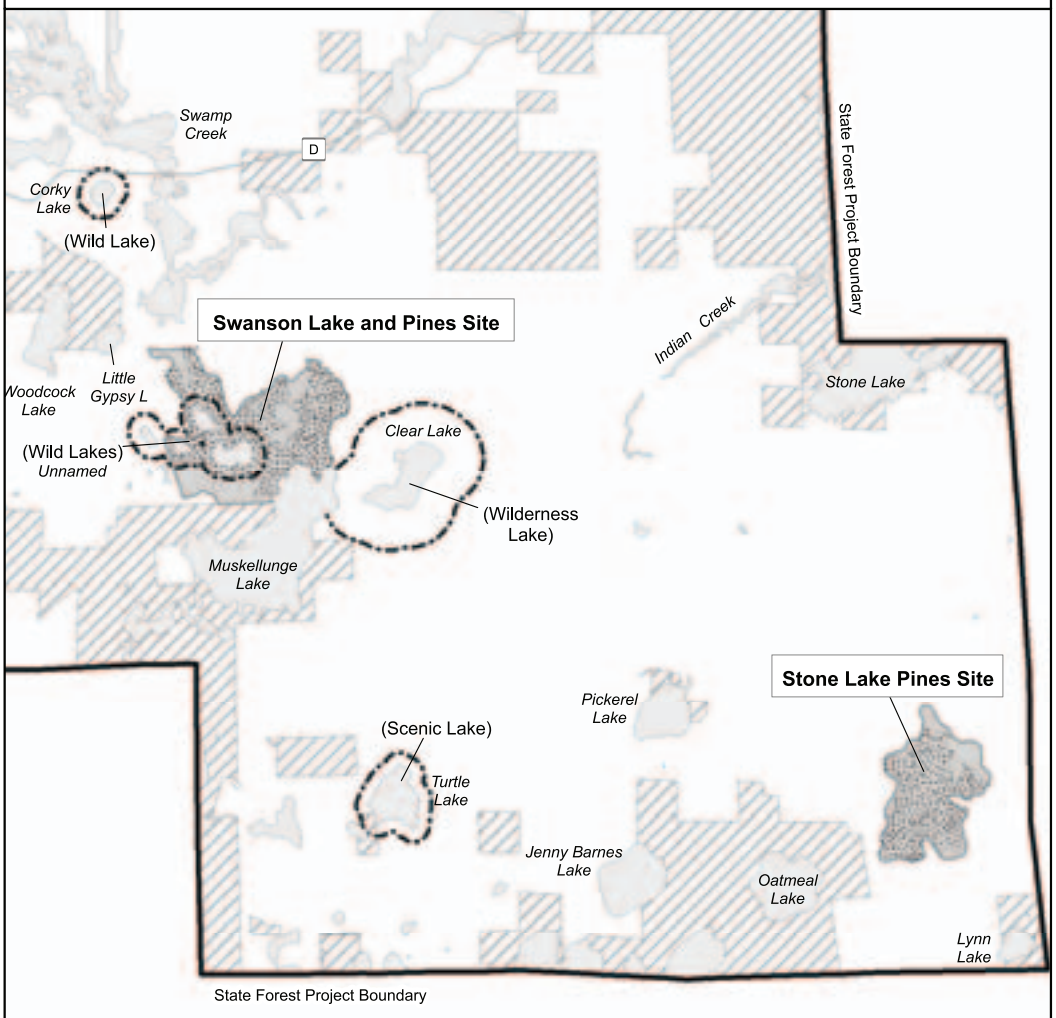
AREA 11 Native Community Management Classification

RED AND WHITE PINE

Native Community Management Classification

Map 27. Area 11 - Red and White Pines

Swanson Lake and Pines and Stone Lake Pines Sites



State Forest Project Boundary
Area 11. Red and White Pines
Swanson Lake and Pines and Stone Lake Pines Sites
Ecological Reference Sites (Passive and Active Mgnt. Zone)
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water

NHAL096-11-5

Northern Highland - American Legion State Forest
Master Plan

0 0.5 1 1.5 Miles
Scale 1:65,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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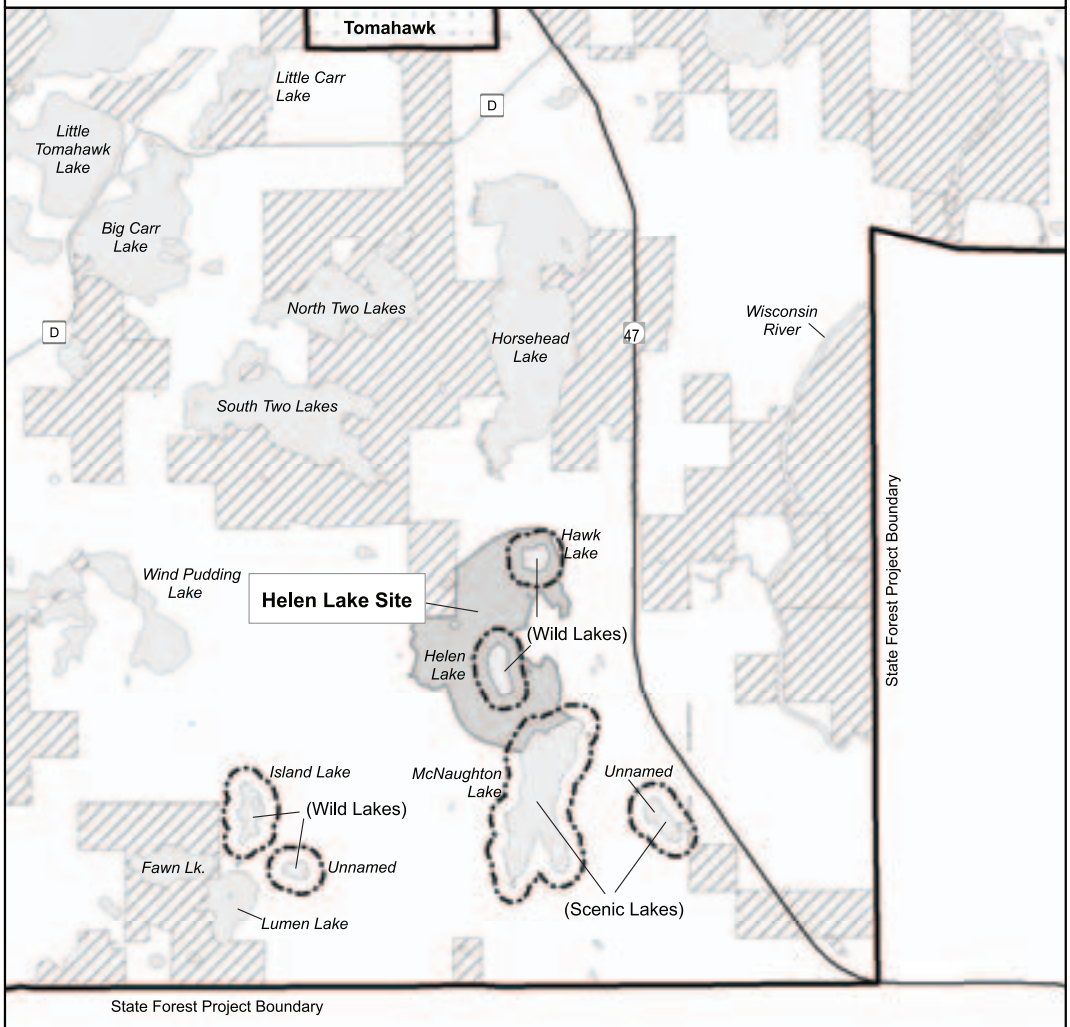
Feb. 24, 2005

Native Community Management Classification

Map 28. Area 11 - Red and White Pines

Helen Lake Site



State Forest Project Boundary
Area 11. Red and White Pines
Helen Lake Site
Ecological Reference Sites
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water

NHAL096-11-6

Northern Highland - American Legion State Forest
Master Plan

0 0.5 1 1.5 Miles
Scale 1:55,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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Feb. 24, 2005

AREA 12 Native Community Management Classification

MIXED FOREST

This area is comprised of seven nearly adjacent sites totaling approximately 13,117 acres. They are Lost Canoe Lake, Allequash Lake, Big Arbor Vitae/Mann, Mann Lake North, Trout Lake West, Carroll Lake, and Two Lakes Pine and Oak Forest. They are distributed primarily in the center of the NH-AL in the Vilas Sandy Plains and Big Arbor Vitae Loamy Hills ecological landscapes. The landscape is a rolling sandy outwash topography with numerous lakes and kettle depressions. In addition, a comparable site is located within the Crystal Lake Recreation area and will be managed similarly.

The present forest is characterized by a mixed forest matrix of tree species with northern hardwoods, red oak, red and white pine, aspen, and white birch dominant on the uplands but slowly being replaced by white pine, balsam fir and red maple through succession. Many areas typed northern hardwoods on these sites are more a mix of red oak, aspen, white birch, red maple, sugar maple and white pine than the more traditional northern hardwoods mix of sugar maple, basswood, yellow birch that is found in the Lake Laura Loamy Hills area. This composition reflects the poorer sandier soils of this area. There are some areas of mature red and white pine also, and these species are found extensively throughout the area as important secondary species.

The habitat types in this area are typically characterized by a moderately developed shrub layer of hazelnut, low sweet blueberry, juneberry, and maple-leaf viburnum, and ground layer plants such as wild sarsaparilla, wintergreen, cow wheat and starflower. Kettle lakes and wetlands are interspersed with these forest stands and contain open bog, poor fen, muskeg, black spruce swamp, tamarack swamp, alder thicket, and spring ponds.

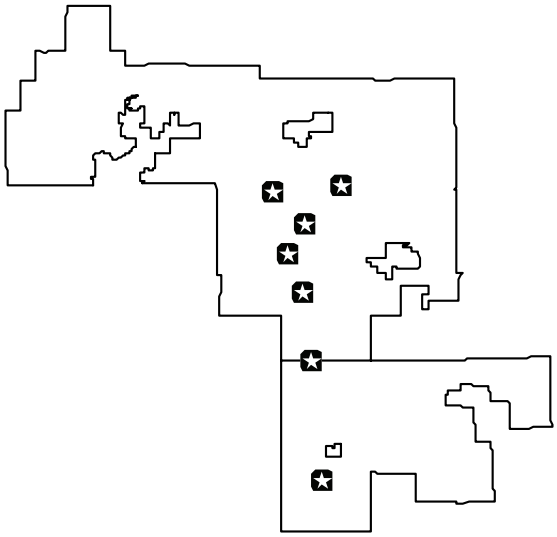
At European settlement, the upland areas contained several different forest types representing the diversity of the topography. Some areas were dominated by aspen/white birch, some by white/red pine, while others supported northern hardwoods.

Historically, fire was a significant disturbance factor within this area but would have been less of an influence on areas lying to the east side of lakes or wetlands. Wind throw was and is an important disturbance factor playing a vital role in shaping forest succession. This ecological landscape was subjected to and evolved with fire and wind disturbance for millennia, but less intense compared to red and white pine communities. These disturbance events oft times set forest succession back to the starting point, but many areas, some for centuries, were missed by these disturbance events. These longer intervals gave a competitive advantage to mid-succession species such as white pine, red oak, and yellow birch. Forest production areas can provide the ecological character of the early to mid-succession, however, large patches with old-growth characteristics, and disturbance patches that cross stand boundaries are missing. These Mixed Forest Native Community Areas will provide the NH-AL with that older component of large trees, numerous standing dead and hollow trees, large amounts of coarse woody debris, and patch sizes more closely aligned with range of natural variability. A few places could receive fire.

AREA 12 SUMMARY

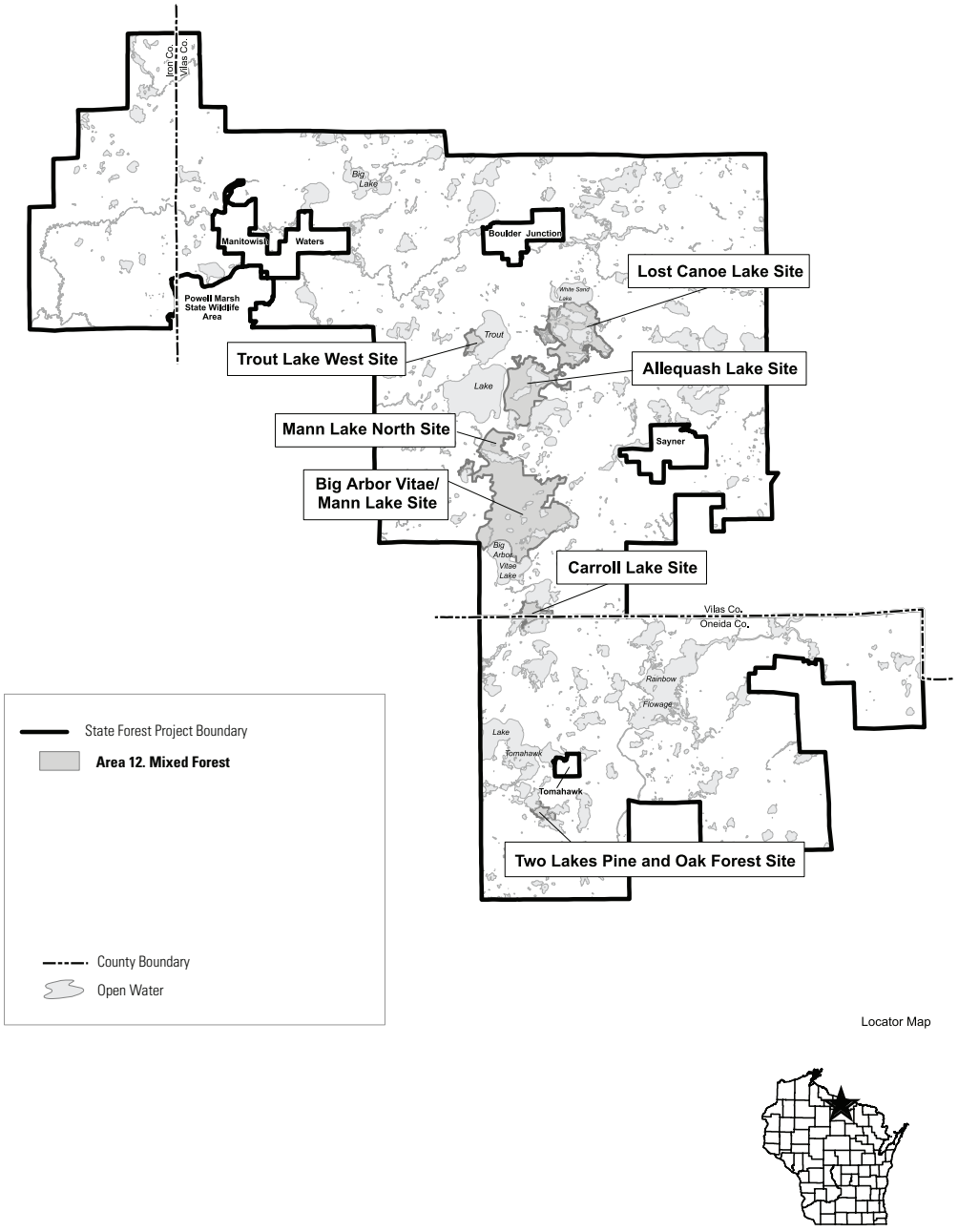
- This area is approximately 13,117 acres in size with 9,738 acres in state ownership.
- Management for old growth characteristics of a forest dominated by red oak, white pine, sugar maple, and yellow birch.
- Opportunity to maintain scenic qualities for lake and other users, and regenerate early and mid succession tree species.

AREA 12 LOCATOR MAP



Native Community Management Classification

Map 29. Area 12 - Mixed Forest



Northern Highland - American Legion State Forest

Master Plan

0 3 6 9 Miles

Scale 1:400,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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Feb. 14, 2005

NHAL096-12-0

AREA 12 Native Community Management Classification

MIXED FOREST

LONG-TERM OBJECTIVES (100 YEAR)

- Maintain sites across the NH-AL landscape with old-growth pine, oak and mixed hardwood characteristics and variable patch sizes, including some patches that are not limited to stand boundaries (i.e. may include all or portions of several forest stands). The mix of forest types reflects the diversity of the topography and site conditions across the landscape.
- Provide opportunities for research, education, and ecological interpretation as well as demonstration of old-growth mixed forest management.

SHORT-TERM OBJECTIVES (50 YEAR)

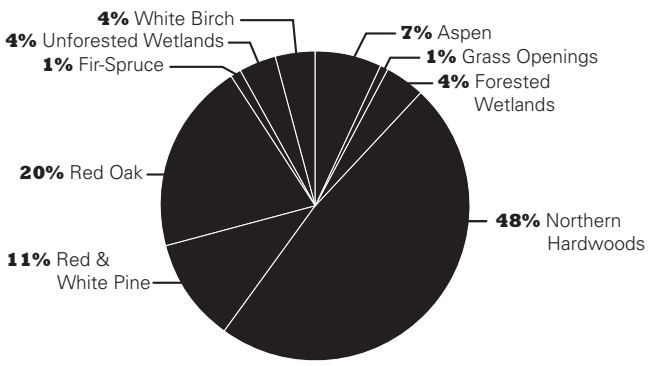
- Enhance the development of a mixed forest dominated by old trees, large amounts of coarse woody debris, numerous standing dead snags, and an age diversity of trees.
- Maintain mid-tolerant tree species composition while incorporating variable patch sizes, and increase the overall age of the forest.
- Maintain three passively managed ecological reference sites – Lost Canoe (1,136 acres, includes 269 lake and spring acres), Allequash Lake and Pines (398 acres, includes 133 lake acres), and Two Lakes Oak-Pine Forest (112 acres). Use these three sites as an ecological reference for adaptive old-growth management activities elsewhere in the mixed forest management area.

RESOURCE MANAGEMENT PRESCRIPTIONS

Management actions in this area follow the General Management Prescriptions, with emphasis on development of old growth pine and mixed forest communities using both passive and active techniques. Some management elements unique to this area are described below:

- Adapt the General Management Prescriptions for each stand to create, enhance and maintain old growth red/white pine, red oak, and stands of mixed northern hardwoods consisting of short-lived and long-lived species characteristics. This includes providing coarse woody debris, leaving large cull trees and increased snag tree densities.

AREA 12 CURRENT LAND COVER



- Use timber harvesting to regenerate forest stands and to create and maintain forest patches of various sizes ranging from 30 to 200 acres. The management techniques may include large and small patch clear cuts or group selection, shelterwood harvest, seed tree retention, ground disturbance, limited planting or prescribed burning either alone or in combination with the above treatments. These treatments should simulate natural disturbance patterns that provide a variety of community sizes and shapes appropriate to this dry, poor nutrient habitat. Change the boundaries of forest stands as necessary to better reflect the natural diversity of patch sizes that result from natural disturbances.

Note: While many timber harvest techniques may be used to regenerate forest stands, the activities would occur only on a portion of the area. Thus focusing active management on old forest and managed old-growth stands and less on regeneration objectives. It is important to apply techniques that can mimic natural processes and maintain or move the mixed forest natural community into mid and late successional stages. This management can be monitored and compared to the passive zones. Retain healthy white and red pine and yellow birch during harvest operations, and create appropriate seedbed and shade conditions to favor these species and gradually increase their numbers in the forest.

- Use monitoring information on changes in composition and structure from old-growth reference stands to aid in future management decisions.

Table 2.12 Area 12- Mixed Forest, Current and desired future conditions for community types in acres and percent of total.

Community Type	Current		Desired Future Condition	
	Acres	% of Total Area	Acres	% of Total Area
Aspen	723	7%	723	7%
Grass openings	73	1%	73	1%
Forested wetlands	382	4%	382	4%
Northern hardwoods	4,683	48%	4,418	45%
Red & White Pine	1,026	11%	1,226	13%
Red Oak	1,961	20%	2,061	20%
Fir-Spruce	77	1%	77	1%
Unforested wetlands	378	4%	378	4%
White birch	435	4%	400	5%
TOTAL	**9,738**	**100.00%**	**9,738**	**100.00%**

- Develop research strategies and conduct research to determine techniques for natural regeneration of white pine-red oak-yellow birch. Use the passively managed ecological reference sites as controls to compare to test methods used on actively managed areas.
- On all of the management area, including area, including the ecological reference sites, to the degree possible, use the existing trail network to provide public access for education and ecological interpretation.
- Bug Lake, Benedict Lake, and Dry Lake (Big Arbor Vitae-Mann Lake Site) and an unnamed lake north of Lost Canoe Lake are designated wild lakes. Passively manage a 400 feet buffer area around these lakes. See the wild lakes management zone section for information on the non-vegetation management requirements within the wild lake zone.

ECOLOGICAL REFERENCE SITES

- Passively manage three ecological reference sites, Lost Canoe Lake, Allequash Lake and Pines, and Two lakes Oak-Pine Forest.
- Develop research in partnership with other staff or cooperators to compare growth and regeneration in passive and active management areas in addition to the collection of reconnaissance data.

Note. With the age of the current majority of stands (1910-1920 origins) in the passively managed areas, forest visitors will see the white birch, aspen, red maple, and fir, falling out of the stand's composition by mortality or blow down and shade tolerant tree species. They will gradually be replaced with sugar maple, white pine, yellow birch, and Ironwood coming in the understory along with shade tolerant shrubs. The pines and oak should remain.

STATE NATURAL AREA DESIGNATION

See State Natural Area discussion in the Appendix for detailed information.

Proposed overlay designations for State Natural Area would occur for Lost Canoe (1,136 acres, includes 269 lake and spring acres), Allequash Lake and Pines (398 acres, includes 133 lake acres), and Two Lakes Oak-Pine Forest (112 acres).

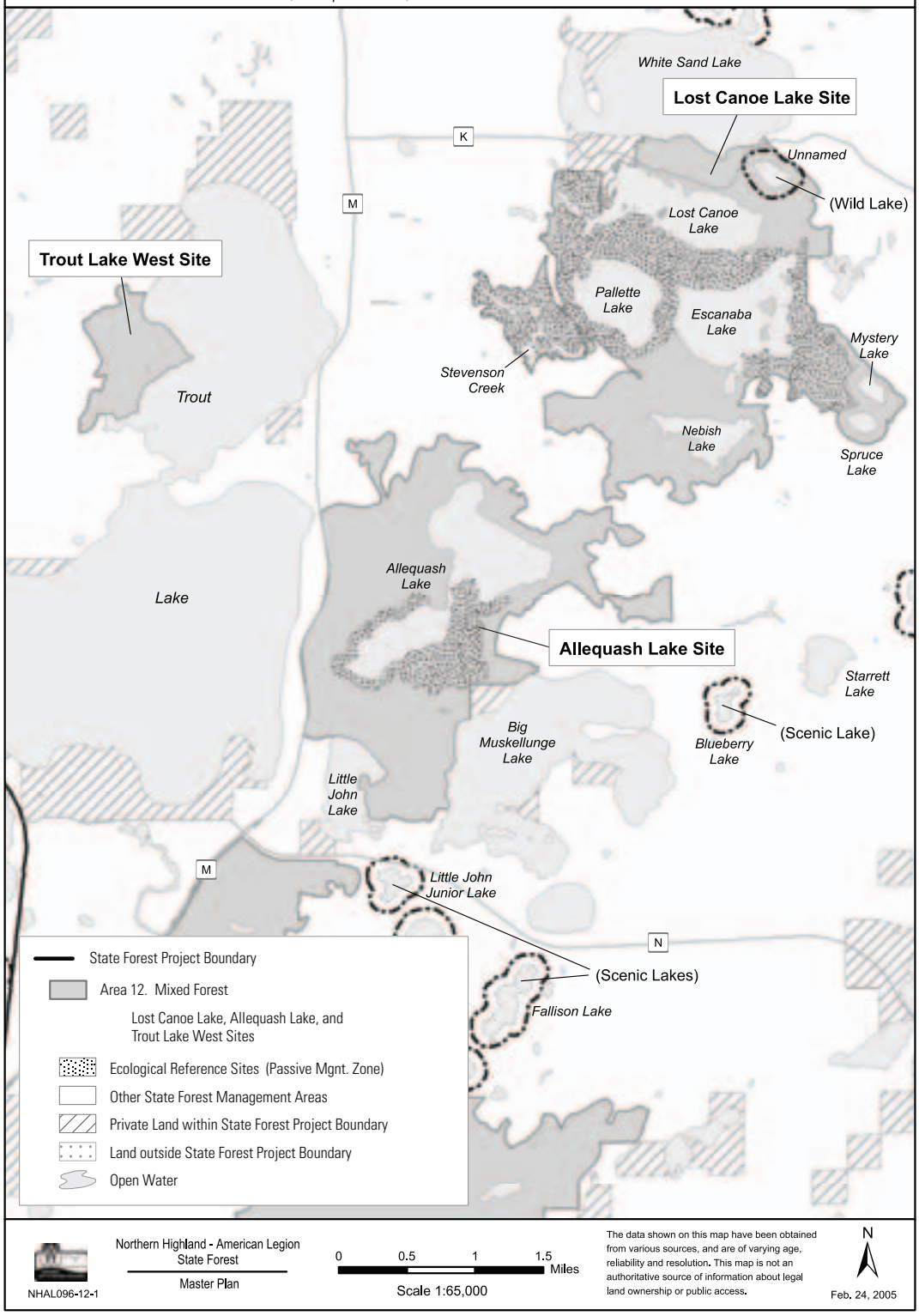
AREA 12 Native Community Management Classification

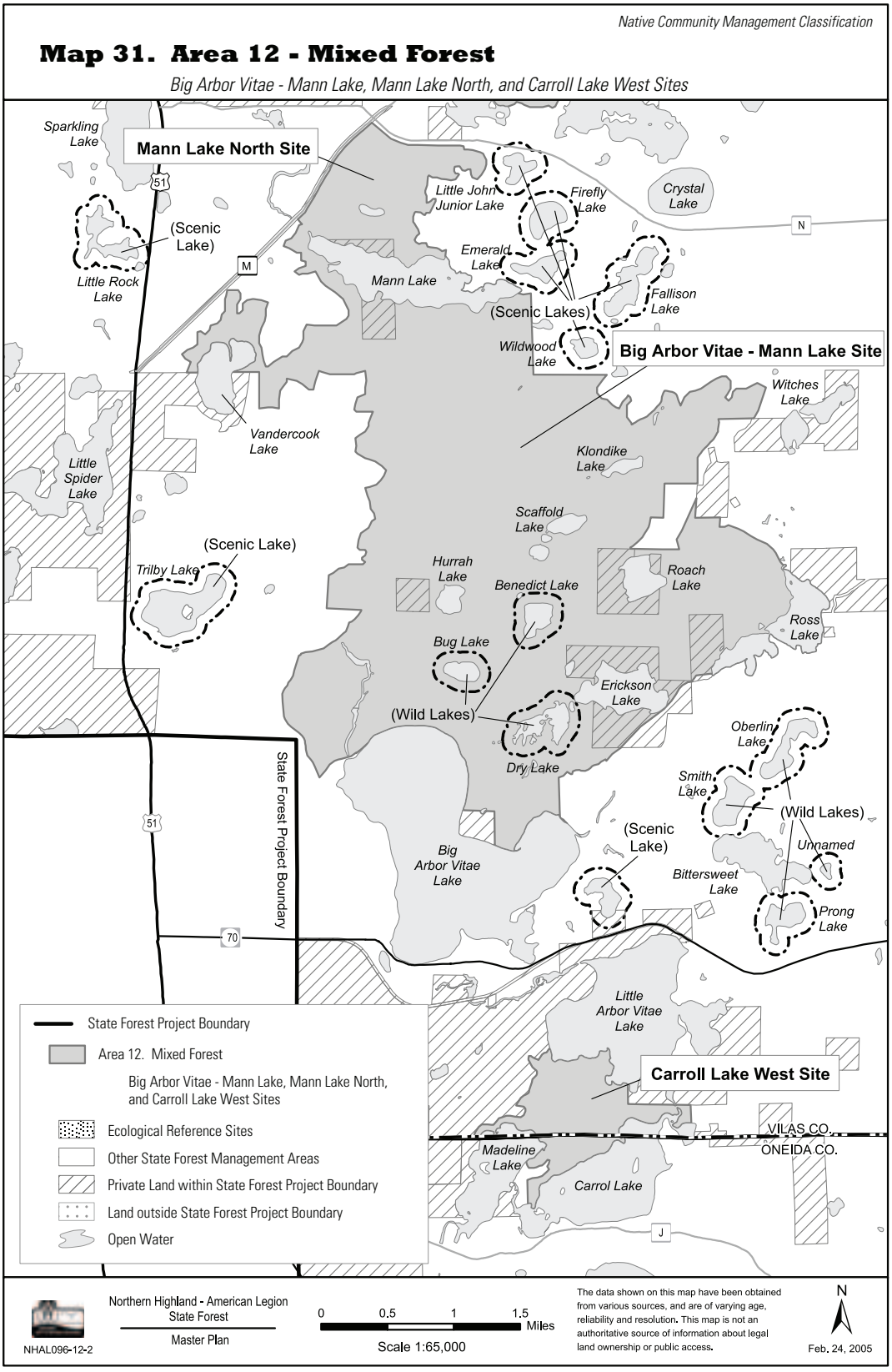
MIXED FOREST

Native Community Management Classification

Map 30. Area 12 - Mixed Forest

Lost Canoe Lake, Allequash Lake, and Trout Lake West Sites




Native Community Management Classification
Map 31. Area 12 - Mixed Forest
Big Arbor Vitae - Mann Lake, Mann Lake North, and Carroll Lake West Sites
Sparkling Lake
Mann Lake North Site
Little John Junior Lake
Firefly Lake
Crystal Lake
(Scenic Lake)
Little Rock Lake
Emerald Lake
Mann Lake
Fallison Lake
(Scenic Lakes)
Wildwood Lake
Big Arbor Vitae - Mann Lake Site
Witches Lake
Vandercook Lake
Klondike Lake
Little Spider Lake
Scaffold Lake
(Scenic Lake)
Trilby Lake
Hurrah Lake
Benedict Lake
Roach Lake
Ross Lake
Bug Lake
Erickson Lake
(Wild Lakes)
Dry Lake
Oberlin Lake
Smith Lake
(Wild Lakes)
Unnamed
(Scenic Lake)
Big Arbor Vitae Lake
Bittersweet Lake
Prong Lake
State Forest Project Boundary
Little Arbor Vitae Lake
Carroll Lake West Site
VILAS CO.
ONEIDA CO.
Madeline Lake
Carrol Lake
State Forest Project Boundary
Area 12. Mixed Forest
Big Arbor Vitae - Mann Lake, Mann Lake North, and Carroll Lake West Sites
Ecological Reference Sites
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water
NHAL096-12-2
Northern Highland - American Legion State Forest
Master Plan
0 0.5 1 1.5 Miles
Scale 1:65,000
The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.
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Feb. 24, 2005

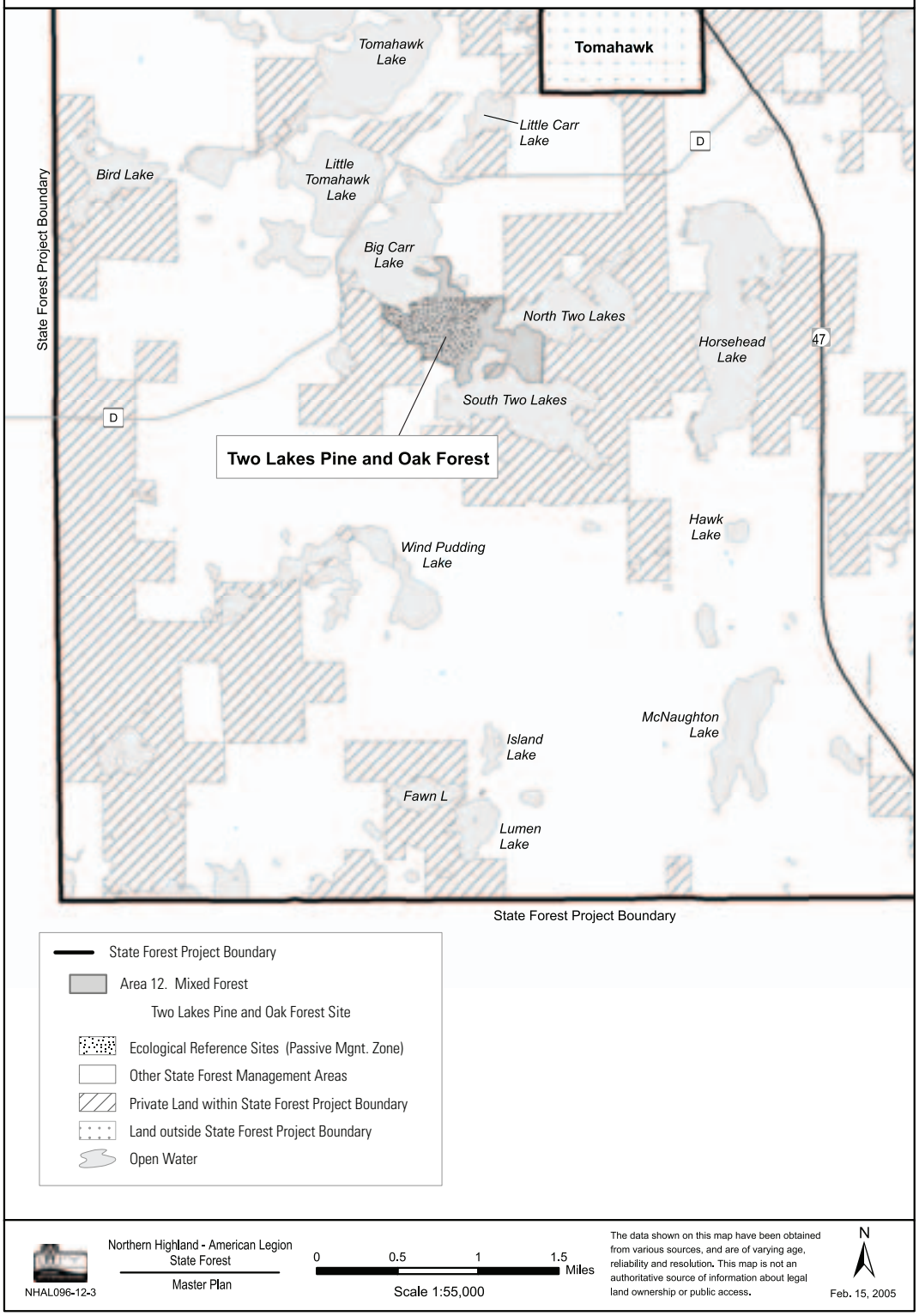
AREA 12 Native Community Management Classification

MIXED FOREST

Native Community Management Classification

Map 32. Area 12 - Mixed Forest

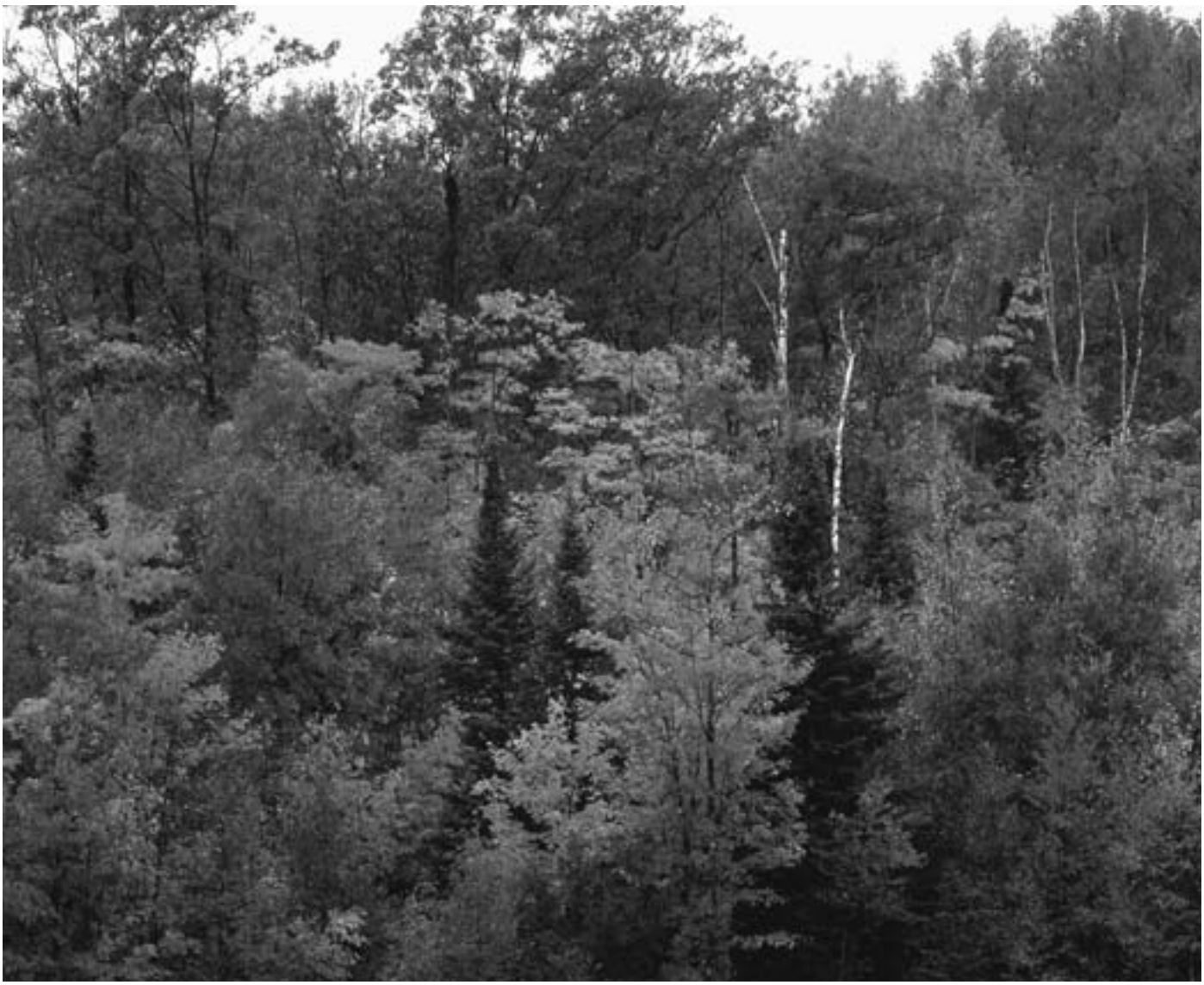
Two Lakes Pine and Oak Forest Site



Native Community Management Classification

MIXED FOREST

AREA 12



AREA 13 Native Community Management Classification

SPECIAL AQUATIC

This area is comprised of twelve different sites covering some 5,737 acres. By their very nature, these aquatic sites are composed primarily of open water systems and their corresponding adjacent wetland communities, soils and topography. These sites are found on a wide variety of landforms and soils, and are located throughout the State Forest. The primary soil types are lowland acid and non-acid organic peat. In some cases, the sites also contain some upland areas within their boundaries, to the extent necessary to ensure the long-term maintenance of the ecological integrity of the area.

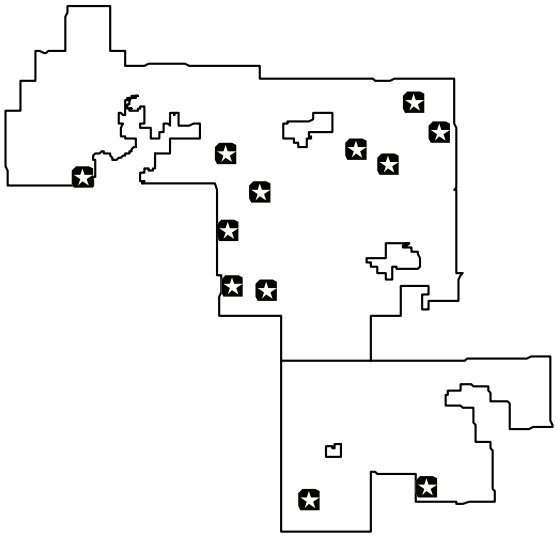
The majority of these lowland sites contain either open wetland or non-merchantable conifer forests. The upland areas contain a mixed composition of actively managed forests of aspen, white birch, pine and oak. These sites host a large portion of the rare species found on the State Forest. Clearly, there are other sites on the Forest that also contain special aquatic features, and these are considered and addressed as a component of the other management areas included elsewhere in this plan.

These wetland areas exist much as they were at the time of European settlement. Historically, fire played a limited role in the species composition of these areas. Wind events and periodic droughts would also have influenced the development of the floristic habitat.

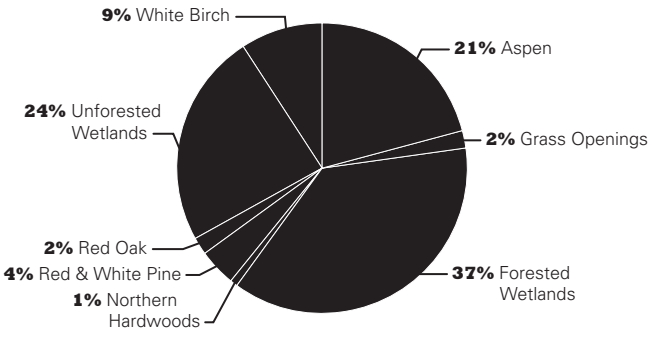
AREA 13 SUMMARY

- This area is approximately 5,737 acres in size with 4,694 acres in state ownership.
- Management of high quality aquatic sites for ecological, water quality and rare species habitat values.
- Maintenance of the overall scenic nature of the rivers, wetlands, and lakes.

AREA 13 LOCATOR MAP

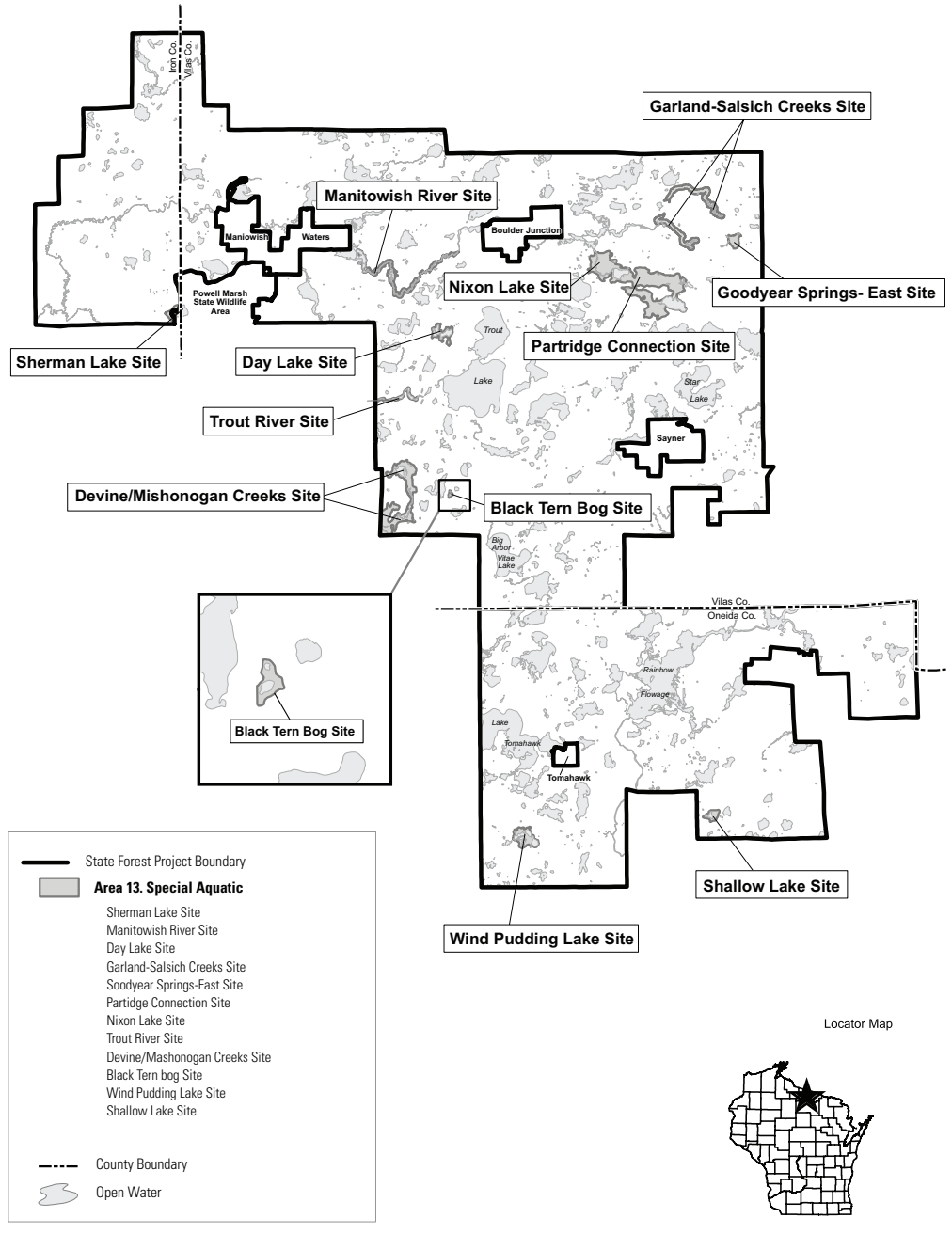


AREA 13 CURRENT LAND COVER



Native Community Management Classification

Map 33. Area 13 - Special Aquatic



AREA 13

Native Community Management Classification

SPECIAL AQUATIC

LONG-TERM OBJECTIVES (100 YEARS)

- Maintain a high quality series of sites across the NH-AL for their ecological, water quality, and rare species habitat values. Natural processes shape these sites with coarse woody debris in the water, numerous stand dead snags along the shore, open sedge meadows and bogs, muskeg vegetation, and scenic waters.
- Provide opportunities for research, education, and ecological interpretation as well as demonstration areas of old-growth forest management on shorelines.

SHORT-TERM OBJECTIVES (50 YEARS)

- Maintain all aquatic and unforested wetlands in an undisturbed condition through passive management.
- Provide a diversity of uplands management that complements the aquatic features associated with each site while maintaining water and scenic quality.
- Improve the forest composition on upland sites by accelerating or enhancing the long-lived tree species component.
- The increase of longer lived species is part of maintaining BMPs for water quality and enhancing aesthetic values. Increase in northern hardwood and red oak will be at the conversion of white birch stands through mortality in passive management zones.

RESOURCE MANAGEMENT PRESCRIPTIONS

The General Timber Type Management Prescriptions and their all of their associated management activities (described at the beginning of the Land Management Section) apply, except as limited by the prescriptions below:

- Passively manage all wetlands and aquatic features (except control of invasive species) including manipulation of aquatic vegetation or bottom materials in the large eastern basin of Wind Pudding Lake.
- Passively manage white cedar and swamp hardwoods along the Manitowish River within the Passive Management Zone shown on the Special Aquatic Management Area map.
- The Department will develop a monitoring strategy for the wetlands, rivers and lakes, focusing on the invertebrates, plants, animals and rare species, and conduct research to determining the affects of adjacent land management on maintaining the rare species on the sites.
- Maintain existing boat landings.
- Perform all vegetation management in ways or at times that protect the quality of aquatic communities, and with aesthetic sensitivity to recreational users.
- Other management activities that may be conducted as needed include individual hazard tree removal along trails, roads, and public access points; invasive species control activities; maintenance of existing roads and public use access sites; mowing and brush cutting in existing public use areas; development activities necessary for stated improvements to public use facilities; fish management actions and prescriptions; monitoring and research activities are all authorized activities. Some small areas may require site preparation for and planting of long-lived tree seedlings to restore vegetation cover.

MANAGEMENT PRESCRIPTIONS FOR SPECIFIC SITES

1. Day Lake and Wind Pudding Lake sites: Manage the uplands for a variety of long-lived tree species and age classes, and convert early successional forest types to long-lived pine and oak.

2. Garland and Salsich Springs, Goodyear Springs East, and Nixon Lake Sites: Use a variety of active management techniques to maintain aspen and jack pine in the uplands. Maintain the open bracken grasslands using brushing and possibly fire.

3. Trout River and Black Tern Bog Sites: Passively manage the lands below the high water mark. Manage the uplands as forest production area, emphasizing BMPs for water quality and aesthetic considerations.

4. Devine Lake-Mishonagon Creek, Shallow Lake and the cedar and swamp hardwoods at Manitowish River: Use passively management only, except to control invasive species.

   Devine Lake is also a designated wild lake. The prescribed passive management prescribed for this site is fully compatible with the management requirements for a wild lake. See the wild lakes management zone section for information on the non-vegetation management requirements within the wild lake zone.

5. Sherman Lake, Partridge Lake and the remaining uplands at Manitowish River:

Apply appropriate forest management techniques to maintain upland forest types and to promote diversity in composition and age, especially for long-lived tree species.

Table 2.13 Area 13- Special Aquatic, Current and desired future conditions for community types in acres and percent of total.

Community Type	Current		Desired Future Condition	
	Acres	% of Total Area	Acres	% of Total Area
Aspen	984	21%	984	20%
Grass Openings	111	2%	111	2%
Forested Wetlands	1,745	37%	1,745	37%
Northern Hardwoods	44	1%	145	3%
Red & White Pine	175	4%	175	4%
Red Oak	106	2%	106	4%
Unforested Wetlands	1,128	24%	1,128	24%
White Birch	401	9%	300	6%
TOTAL	**4,694**	**100.00%**	**4,694**	**100.00%**

STATE NATURAL AREA DESIGNATION

See State Natural Area discussion in the Appendix for detailed information.

Proposed overlay designations for State Natural Area would occur for Day Lake (209 acres, includes 110 lake acres), [Garland and Salsich Springs (775 acres, includes 37 stream acres), Goodyear Springs East (131 acres, includes 4 spring acres) – Together these two sites would be combined with Johnson Lake Barrens to form the Johnson Lakes Barrens and Springs SNA], Nixon Lake (737 acres, includes 137 lake acres), Trout River (108 acres – all river), Devine Lake – Mishonagon Creek (1,185 acres, includes 90 acres of lake and stream), Black Tern Bog (15 acres – all lake), Wind Pudding Lake (340 acres, includes 159 lakes acres), and Shallow Lake (103 acres, includes 28 lake acres).

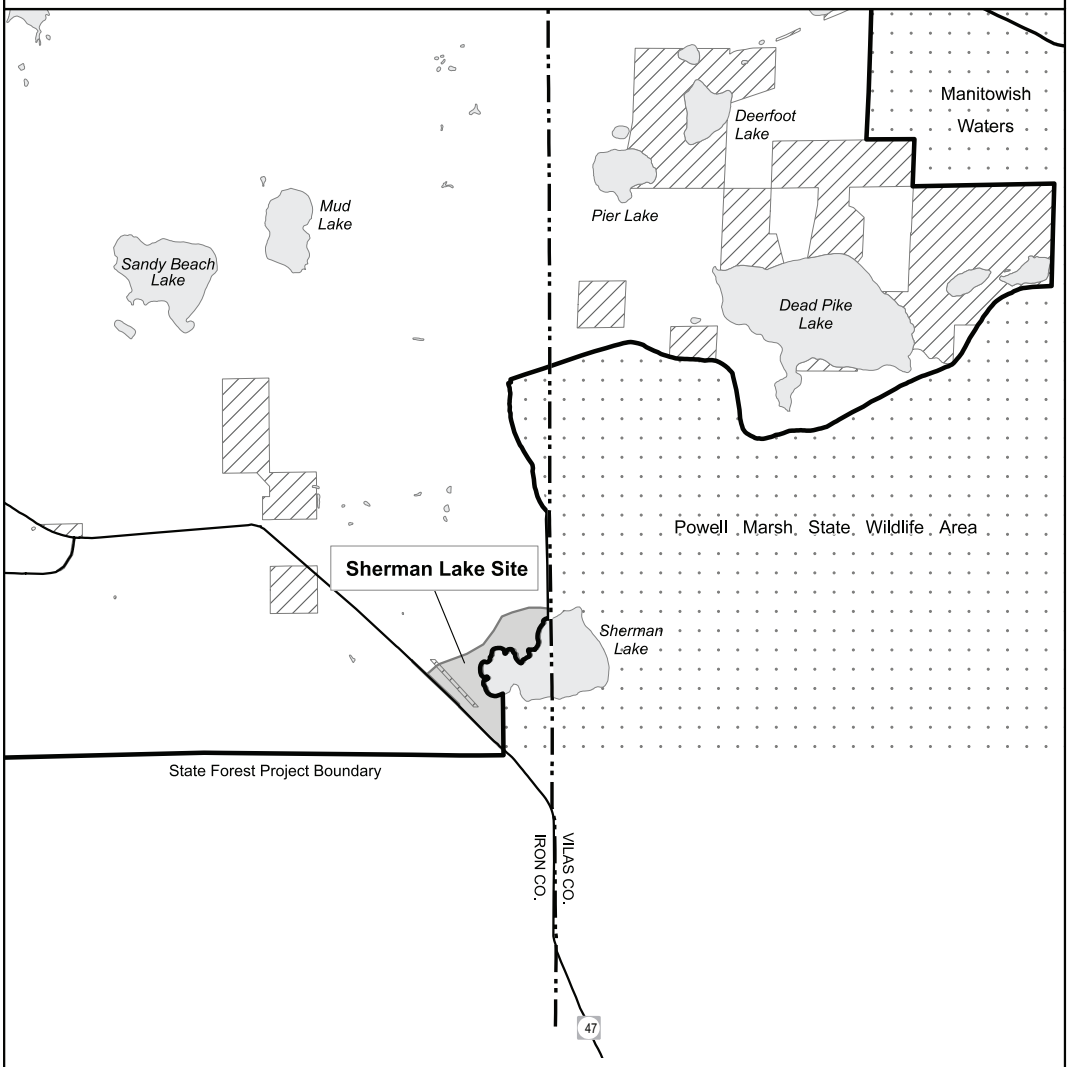
AREA 13 Native Community Management Classification

SPECIAL AQUATIC

Native Community Management Classification

Map 34. Area 13 - Special Aquatic

Sherman Lake Site



State Forest Project Boundary

Area 13. Special Aquatic

Sherman Lake Site

Ecological Reference Sites

Other State Forest Management Areas

Private Land within State Forest Project Boundary

Land outside State Forest Project Boundary

Open Water

NHAL096-13-1

Northern Highland - American Legion State Forest

Master Plan

0 0.5 1 1.5 Miles

Scale 1:55,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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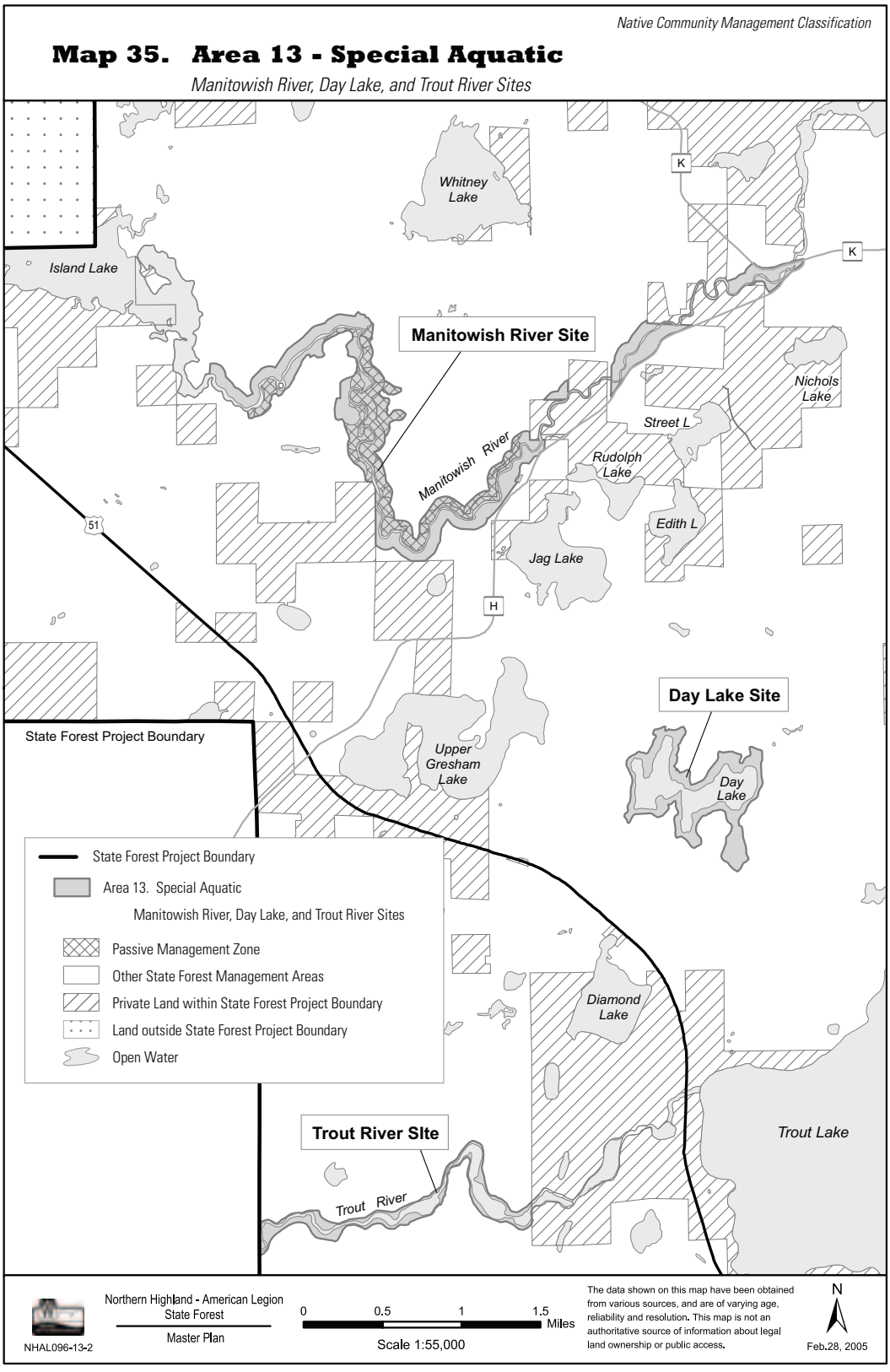
Feb. 15, 2005


Native Community Management Classification
Map 35. Area 13 - Special Aquatic
Manitowish River, Day Lake, and Trout River Sites
Whitney Lake
Island Lake
Manitowish River Site
Nichols Lake
Street L
Manitowish River
Rudolph Lake
Edith L
Jag Lake
K
K
51
H
Day Lake Site
State Forest Project Boundary
Upper Gresham Lake
Day Lake
State Forest Project Boundary
Area 13. Special Aquatic
Manitowish River, Day Lake, and Trout River Sites
Passive Management Zone
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water
Diamond Lake
Trout River Slte
Trout Lake
Trout River
Northern Highland - American Legion State Forest
Master Plan
NHAL096-13-2
0 0.5 1 1.5 Miles
Scale 1:55,000
The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.
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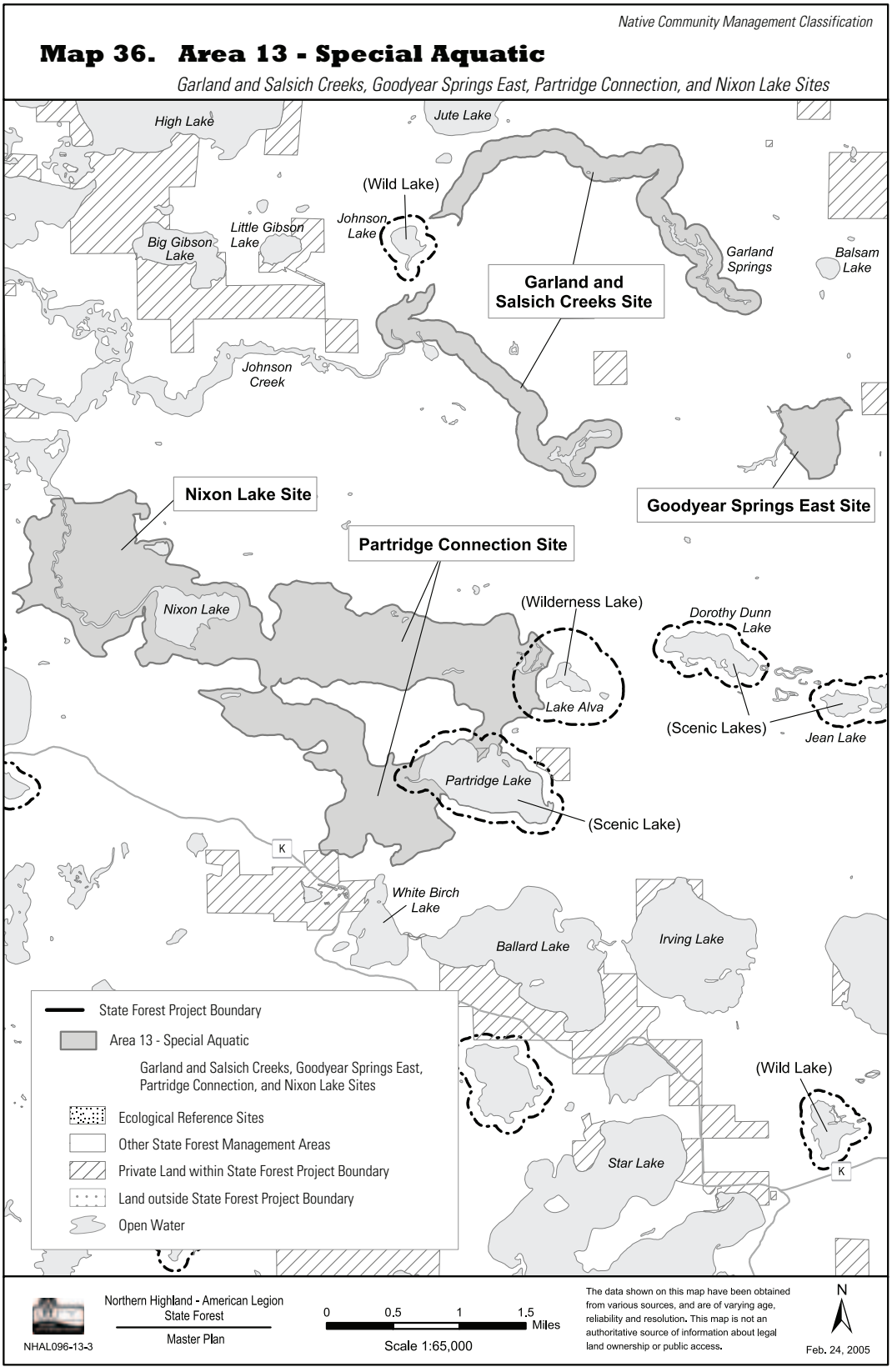
Native Community Management Classification
Map 36. Area 13 - Special Aquatic
Garland and Salsich Creeks, Goodyear Springs East, Partridge Connection, and Nixon Lake Sites
High Lake
Jute Lake
(Wild Lake)
Johnson Lake
Little Gibson Lake
Big Gibson Lake
Garland Springs
Balsam Lake
Garland and Salsich Creeks Site
Johnson Creek
Nixon Lake Site
Goodyear Springs East Site
Partridge Connection Site
Nixon Lake
(Wilderness Lake)
Dorothy Dunn Lake
Lake Alva
(Scenic Lakes)
Jean Lake
Partridge Lake
(Scenic Lake)
K
White Birch Lake
Ballard Lake
Irving Lake
(Wild Lake)
Star Lake
K
State Forest Project Boundary
Area 13 - Special Aquatic
Garland and Salsich Creeks, Goodyear Springs East, Partridge Connection, and Nixon Lake Sites
Ecological Reference Sites
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water
NHAL096-13-3
Northern Highland - American Legion State Forest
Master Plan
0 0.5 1 1.5 Miles
Scale 1:65,000
The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.
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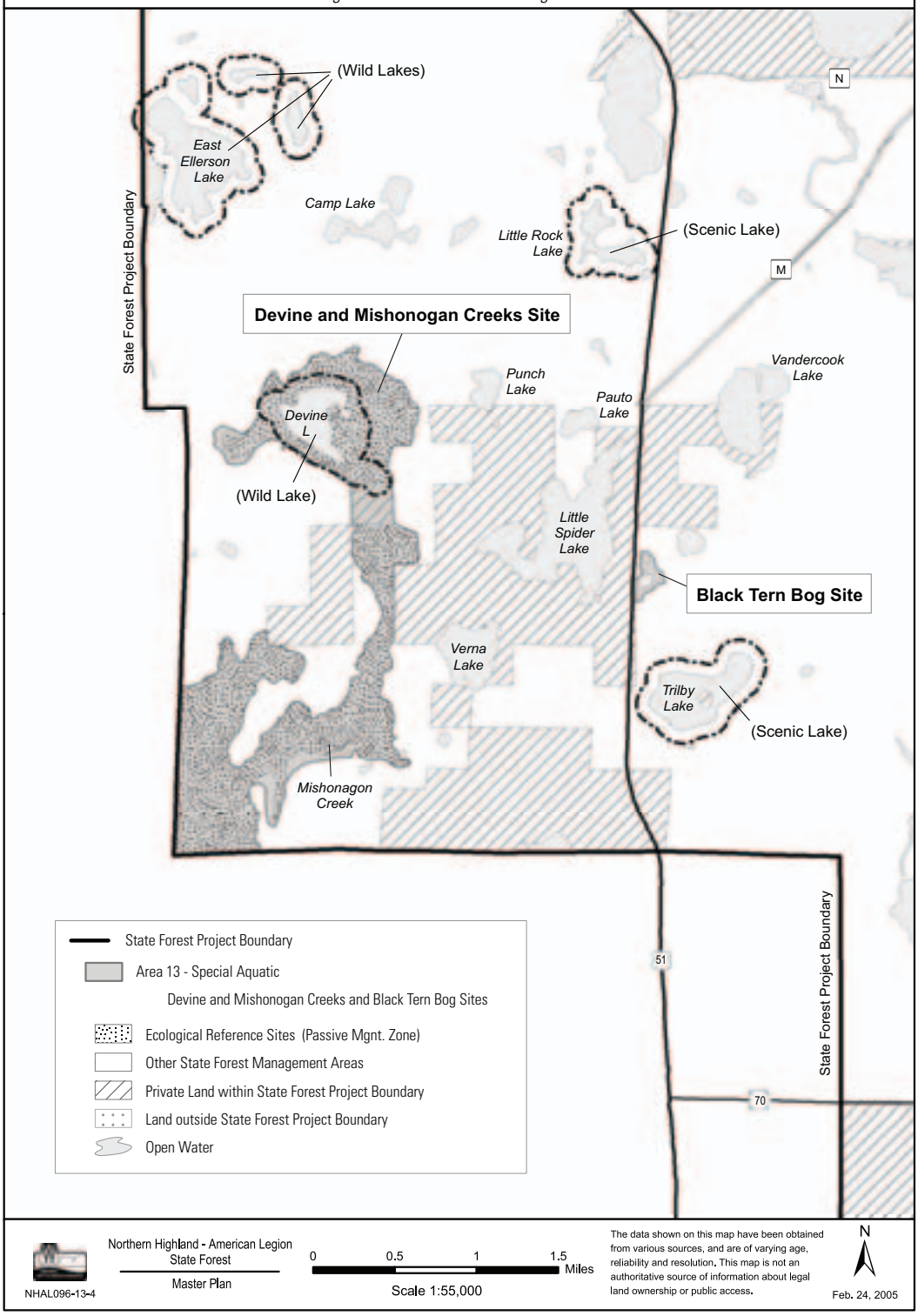
Feb. 24, 2005

Native Community Management Classification

Map 37. Area 13 - Special Aquatic

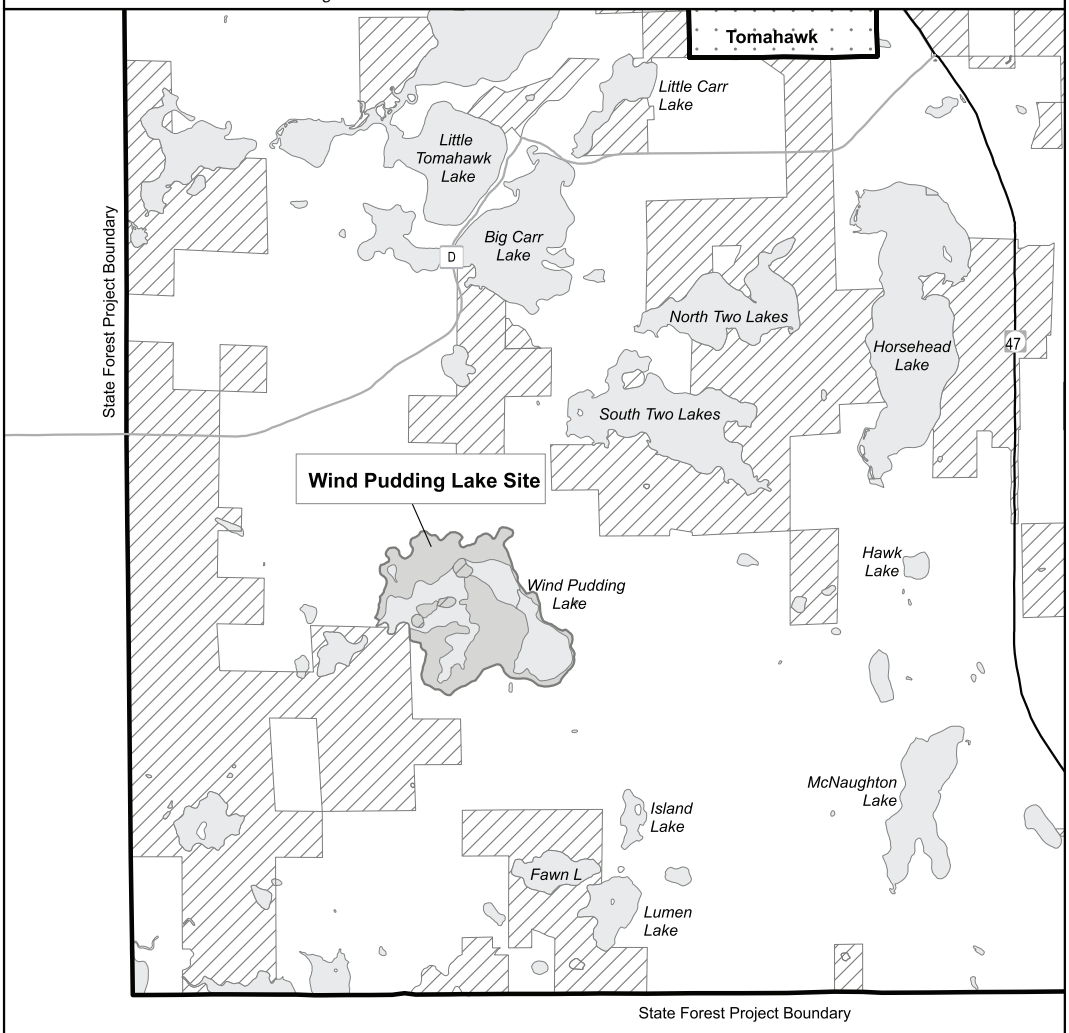
Devine and Mishonogan Creeks and Black Tern Bog Sites



Native Community Management Classification

Map 38. Area 13 - Special Aquatic

Wind Pudding Lake Site



State Forest Project Boundary
Area 13 - Special Aquatic
Wind Pudding Lake Site
Ecological Reference Sites
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water

NHAL096-13-5

Northern Highland - American Legion State Forest
Master Plan

0 0.5 1 1.5 Miles
Scale 1:55,000

The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.

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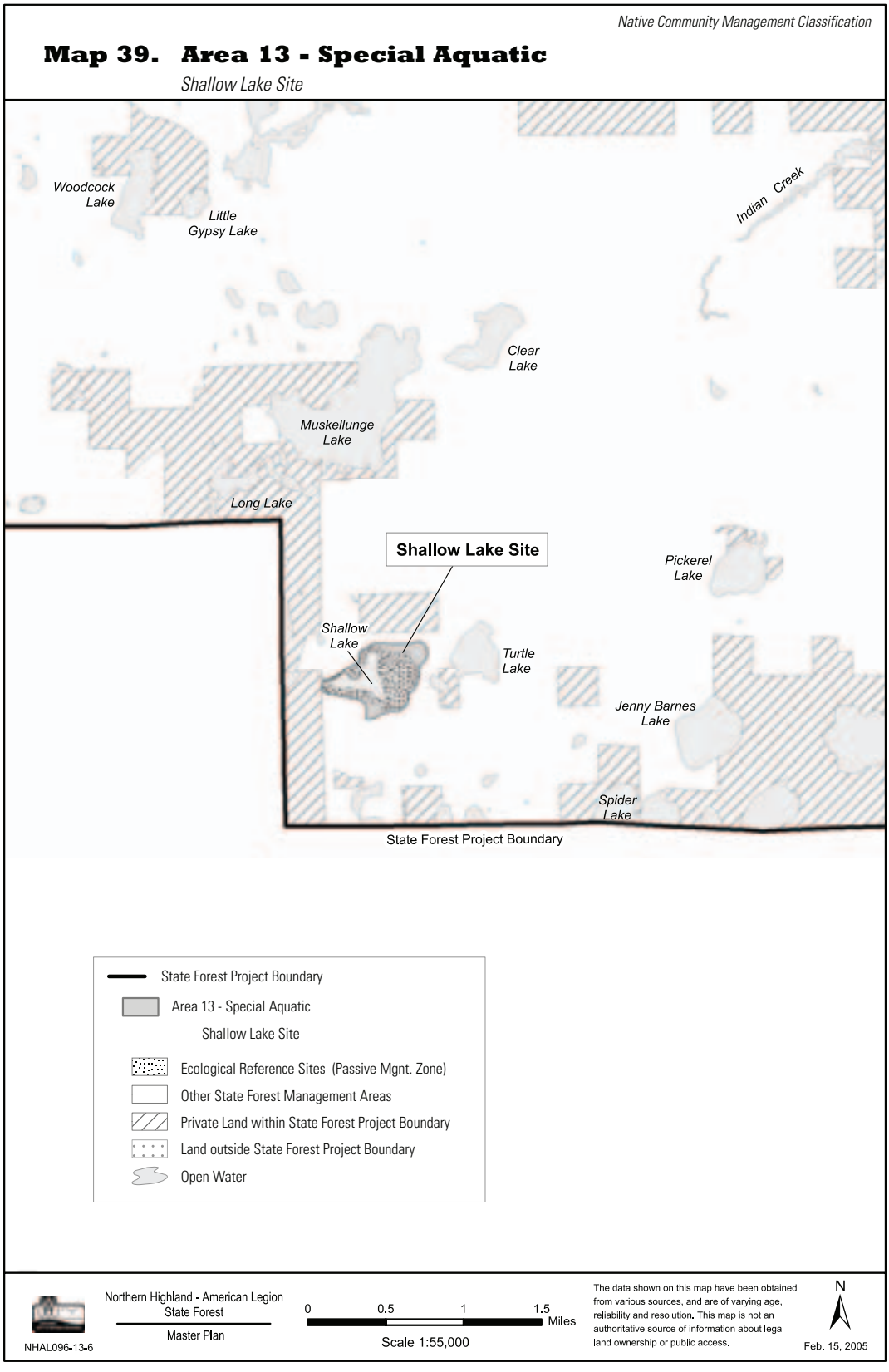
Feb. 10, 2005


Native Community Management Classification
Map 39. Area 13 - Special Aquatic
Shallow Lake Site
Woodcock Lake
Little Gypsy Lake
Indian Creek
Clear Lake
Muskellunge Lake
Long Lake
Shallow Lake Site
Pickerel Lake
Shallow Lake
Turtle Lake
Jenny Barnes Lake
Spider Lake
State Forest Project Boundary
State Forest Project Boundary
Area 13 - Special Aquatic
Shallow Lake Site
Ecological Reference Sites (Passive Mgnt. Zone)
Other State Forest Management Areas
Private Land within State Forest Project Boundary
Land outside State Forest Project Boundary
Open Water
Northern Highland - American Legion State Forest
Master Plan
NHAL096-13-6
0 0.5 1 1.5 Miles
Scale 1:55,000
The data shown on this map have been obtained from various sources, and are of varying age, reliability and resolution. This map is not an authoritative source of information about legal land ownership or public access.
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Feb. 15, 2005

AREA 14 Native Community Management Classification

JOHNSON LAKE BARRENS

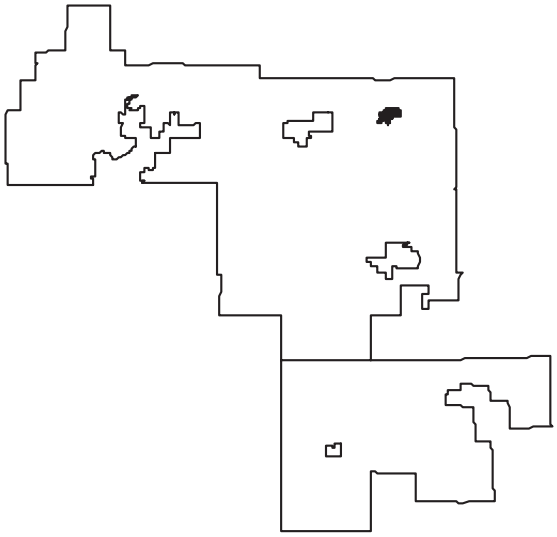
The Johnson Lake Barrens Management Area is a 514 acre that has been maintained as open barrens community with jack pine and aspen using timber harvest and prescribed fire. It is located on the dominant sandy rolling to level outwash plain. The rolling topography also supports wetland depressions. The eastern portion has been managed with fire and is dominated by a heath community of blueberries, bearberry and sweet fern. Jack pine and aspen along with open and black spruce wetlands dominate the western portion of the area.

Historically, fire regularly burned across this rolling to level landscape, promoting a relatively open landscape with dense and productive crops of blueberries and other heath plants. Variations in the local topography, including lakes and streams and wetlands, acted as fire breaks or helped reduce the intensity of fires resulting in a patchwork of groves of oak, jack pine and trembling aspen, and isolated large open-grown red pine.

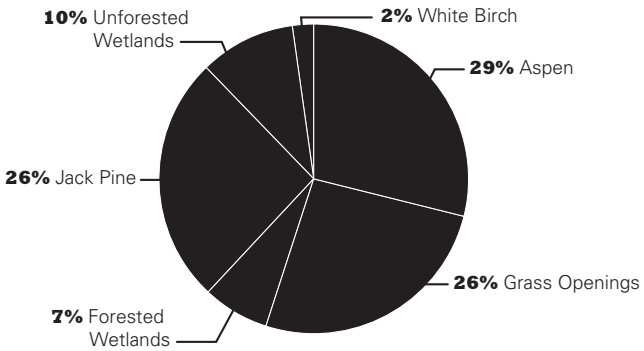
AREA 14 SUMMARY

- This area is approximately 552 acres in size with 514 acres in state ownership.
- Management for barrens community with early successional forest components.

AREA 14 LOCATOR MAP



AREA 14 CURRENT LAND COVER



Native Community Management Classification

Map 40. Area 14 - Johnson Lake Barrens

Johnson Creek and Pines, and Johnson Lake and Barrens Sites

AREA 14

Native Community Management Classification

JOHNSON LAKE BARRENS

LONG-TERM OBJECTIVES (100 YEAR)

- Maintain an early successional, harvest driven older jack pine community in the upland portion of Johnson Creek and Pines site.
- Maintain an early successional, fire driven barrens in the upland portion of Johnson lake and Barrens sites.
- Maintain water quality and native species composition of the springs streams and wetlands.
- Provide sites for research, education, and ecological interpretation as well as demonstration areas of barrens and old jack pine forest management.

SHORT-TERM OBJECTIVES (50 YEAR)

- Maintain open barrens.
- Maintain jack pine stands.
- Continue to protect the springs, steams, lakes and wetlands with passive management.
- Accommodate recreational hiking use on logging roads and firebreaks.

RESOURCE MANAGEMENT PRESCRIPTIONS

Management actions in this area follow the General Management Prescriptions, described in the beginning of the Land Management Section, with emphasis on creating and maintaining a site dominated by open barrens and jack pine. Some prescription elements unique to this area include:

- All upland acres will be managed for barrens – mostly open land with a few large red pines, scattered jack pine trees and grooves, and patches of brush (mostly hazel and aspen).
- Clear cut aspen stands at appropriate age and follow with fire, ground disturbance and/or site preparation (including herbicides) and supplemental planting to convert some aspen stands to jack pine. Priority will be in mixed stands of aspen and jack pine.
- To regenerate existing jack pine stands use a combination of timber harvest followed by prescribed fire if conditions are suitable. If regeneration is not successful then use site preparation and supplemental planting of jack pine.
- Conduct prescribed burns east of Johnson Lake on 5 to 10 year rotations in the east unit Johnson Lake and Barrens to promote the heath ground layer.

Maintain firebreaks for access by fire control and land maintenance vehicles.

- Use mechanical cutting, brush burning, or limited herbicide use as needed to manage fuel loads and increase desired species.
- To the degree possible, use the existing trail network to provide public access for education and ecological interpretation.
- Johnson Lake is designated wild lakes. Passively manage a 400 ft. buffer area around the lake. See the wild lakes management zone section for information on the non-vegetation management requirements within the wild lake zone.

STATE NATURAL AREA DESIGNATION

See State Natural Area discussion in the Appendix for detailed information.

Proposed overlay designations for State Natural Area would occur for Johnson Lake Barrens and Springs (171 acres, includes 25 lake acres) [Together with Garland and Salsich Springs and Goodyear Springs-East would form the Johnson Lake Barrens and Springs SNA – 1,077 acres].

Native Community Management Classification

AREA 14

JOHNSON LAKE BARRENS

Table 2.14 Area 14 - Johnson Lake Barrens, Current and desired future conditions for community types in acres and percent of total.

Community Type	Current		Desired Future Condition	
	Acres	% of Total Area	Acres	% of Total Area
Aspen	147	29%	107	21%
Grass openings	136	26%	136	26%
Forested wetlands	35	7%	35	7%
Jack pine	132	26%	172	33%
Unforested wetlands	52	10%	52	10%
White birch	12	2%	12	2%
TOTAL	**514**	**100%**	**514**	**100%**